

SCAFFOLDING EMERGENT LITERACY SKILLS IN PRE-KINDERGARTEN
THROUGH WRITING INSTRUCTION

by

Penny S. Thompson

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Dissertation Committee:

Dr. Amy M. Elleman, Chair

Dr. Jwa K. Kim

Dr. Robyn Ridgley

Dr. Joanna Durham-Barnes

Dedicated to my family that continuously supported and encouraged me throughout this
passionate endeavor- David, Megan, Drew, Mom and Dad. I love you all.

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ABSTRACT

The early years of a child's life are critical for developing emergent literacy skills to be successful in school entry, continuing higher education, and future career. Core early literacy skills that a child needs to become a successful reader are oral language, alphabet knowledge, and phonological awareness in addition to print awareness, sound-symbol recognition, and word identification. The reading and writing connection has been researched, and findings indicate that writing enhances early reading skills. The early grades of pre-k and kindergarten are foundational years for building reading and writing skills, and are especially important for children with language needs. An exhaustive search in this review identified the lack of quantitative research in the area of early childhood writing, with only 19 studies found considering writing instruction in pre-kindergarten through sixth grade. Few quantitative studies have been published on writing instruction in the early grades with emergent learners of literacy. This study was conducted to determine the effectiveness of interactive reading and writing intervention when implemented by pre-kindergarten teachers working in the classroom setting for improving reading skills through adult scaffolded writing opportunities. Participants were 174 pre-kindergarten students enrolled in a state funded pre-k program, including students with disabilities, English language learners, and typical peers. In the current study, a 13-week intervention was implemented using a developed scope and sequence focused on targeted literacy skill concepts, explicit instruction taught through scripted lesson plans involving sociocultural storybooks, and implementation through an interactive reading and writing framework. Results of this research suggest that children

participating in the interactive reading and writing intervention exhibited greater gains in reading outcomes of phonemic awareness, print knowledge, and sound knowledge as compared to children who did not receive the intervention. Writing outcomes on the standardized measure were not significant for the pre-k participants; however, reading outcomes were significant with both standardized and formal measures on phonemic awareness and sound knowledge. Reading outcomes for English language learners were significant for phonemic awareness, but not with other literacy skills. Students with disabilities did not show improvement with reading or writing outcomes.

Keywords: Emergent Literacy, Pre-K, ELL, SWD, Interactive Writing, Scaffolded Writing

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CHAPTER I

Introduction

The early years of a child's life are critical for developing emergent literacy skills to be successful in school entry, continuing higher education, and future career. School entry into pre-kindergarten or kindergarten is the time when children are determined to be "school ready" or not, according to entry level assessments indicating ability placement for pre-reading skills of letter recognition, phonological awareness, print awareness, sound-symbol recognition, and word identification (Snow, Burns, & Griffin, 1998). Given the importance for reading comprehension in all school content areas and the need for ensuring all students are successful in developing needed reading skills, the importance of building a strong literacy foundation in pre-k and kindergarten has been heightened to a new level. Emergent literacy skills of reading and writing help students to achieve school success (National Association for the Education of Young Children, 1998). The reading and writing connection has been researched, and findings indicate that writing enhances early reading skills of word identification, decoding, passage comprehension, and word reading (Harrison, Ogle, McIntyre, & Hellsten, 2008). The review conducted for this study found less research pertaining to best strategies for teaching writing to early learners, with most of the research conducted with late elementary school students. Fewer still are the quantitative studies of writing interventions conducted with pre-kindergarten and kindergarten students using standardized reading and writing assessments. The current study on writing instruction was conducted to contribute to the body of literature regarding effective strategies for

teaching early reading skills to emergent learners, especially with young children of pre-kindergarten age.

History of Emergent Literacy

The ability to read and write is a prerequisite skill for student success in school and with future career opportunities. If a child fails to have essential early literacy skills when entering kindergarten he or she is already considered at-risk academically. Becoming literate is a complex process that should be viewed from the child's literacy perspective, taking into account their contextual world, everyday experiences, and social interactions with friends and family (Taylor, 2001). The sociocultural perspective takes the position that learning is more about the process than the product. Clay is credited with coining the term emergent literacy in 1966, which influenced the practices of reading and writing for young children during the 1980's (Vukelich & Christie, 2004). The social constructivist view encourages children to write in meaningful and authentic ways, connecting reading and writing in everyday experiences while interacting with adults and peers. With guidance through literary experiences in the classroom, children progress through the stages of writing as they construct meaning and apply their knowledge of written language to real world situations and simulations.

Bodrova and Leong (1998) researched children's emergent writing and developed a curriculum based on Vygotsky's theory of learning and development using the construct of zone of proximal development (ZPD) for scaffolding student learning. The technique of scaffolded *writing* was coined by Bodrova and Leong, and is a process of using cultural tools and private speech to scaffold child's writing (Bodrova & Leong, 2001). Their method of scaffolded writing combined prior work from two other

researchers, Elkonin and Glaperin (Bodrova & Leong, 1998, p.2) into a technique using “materialization” and “private speech” with early learners. ZPD (Vygotsky, 1978) is defined by Vygotsky as the instructional range between the learner’s independent level without assistance, and the performance level beyond the learner’s capacity but achievable with assistance from a *More Knowledgeable Other* (MKO). With scaffolding, the learner will take more and more responsibility as learning is increased and scaffolding is decreased. Cultural tools also help mediate learning and enable students to develop the capacity for higher mental functions in the learning process. Social constructivist theory is an academic fit for young students because of the social interaction element and active mental engagement required of students (Bodrova & Leong, 2001). This instructional approach to learning best fits the needs of young learners because they are actively constructing meaning through their environment with peers. This is especially developmentally appropriate for pre-k students as they learn in socially created situations that are purposely planned and orchestrated. Many pre-k programs include English language learners (ELL) and students with disabilities (SWD) that often need a different instructional approach in order to reach their full learning potential. It is important to understand the writing approach that best meets the literacy needs of these student groups. Scaffolding is one instructional approach that may be helpful with these populations.

The term scaffolding has been applied to several content areas and also with many variations of definitions. In 1976 Bruner coined the term “scaffolding” to describe tutorial interactions between an adult and child (Hobsbaum, Peters, & Sylva, 1996).

Vygotsky’s concept of ZPD is the theoretical support for scaffolding young children from

their present skill level to their next level of potential learning (Bodrova, Leong, Norford & Paynter, 2003). For this study, the terms “scaffolded writing” and “scaffolding writing” are defined as the process of providing support to learners by an adult or peer during the writing process so that they might complete a writing task that is beyond their capability working independently (Pentimonti & Justice, 2009). The creation and construction of written text allows scaffolded writing opportunities for young learners based on each student’s individual level of capacity. Research on writing instruction indicates that scaffolding writing instruction with emergent readers enhances early reading skills of letter identification, sound-to-symbol correspondence, print knowledge, and instant word recognition (Bodrova et al., 2003).

Relevance of the Current Research

This research is especially relevant given the recent emphasis on students reading on grade level by third grade. This expectation of literacy attainment creates an additional pressure on school entry readiness for young students’ reading skills. Considering some students begin pre-k or kindergarten from low socioeconomic backgrounds, there is an additional concern for the lack of language experiences and vocabulary background these students have in their literacy repertoire (Hart & Risley, 1995). This need for school entry readiness places more emphasis on the instructional practices surrounding emergent literacy in early grades. It is hypothesized that children participating in the interactive reading and writing intervention would exhibit greater gains on reading and writing outcomes as compared to children who did not receive such intervention.

Rationale and Methodology for Mixed-Method Design

A mixed-methods design using quantitative and qualitative methodology was chosen in order to better explain the quantitative writing results and describe the qualitative data of teacher methodologies during writing instruction, as well as student perceptions of reading and writing. This quantitative-qualitative approach is both an objective method for assessing the writing-reading relationship, and a phenomenological view to understand perceptions of educators and writers (Joyner, Rouse, & Glatthorn, 2013).

For the quantitative portion of the study, a pre-post control group design was utilized. Preschool students were assessed with multiple measures in an effort to assess student literacy growth. Participants were assessed for reading skills using three norm-referenced instruments and one reading observation survey to evaluate the impact of writing instruction on pre-kindergarten students' acquisition of early reading skills: phonemic awareness, letter recognition, letter-sound correspondence, print awareness, word reading.

For the qualitative portion, a student survey, teacher interview, and student interviews were administered during the study. In order to evaluate the children's self-efficacy as writers, an informal survey was administered to students to measure these literacy constructs (Clippard & Nicaise, 1998). Each of the nine teachers was interviewed at the beginning of the study to gather data on teacher literacy attitudes and perspectives. Six students per classroom were randomly chosen for interviewing at the beginning and end of the study to assess student attitudes and values regarding literacy and to evaluate if qualitative results support or reject the quantitative findings. The qualitative results were

analyzed in order to describe the teacher and student perceptions, attitudes, and influences regarding instructional literacy processes.

Delimitations of the Current Research

In an effort to concisely answer the research questions and the understanding that the researcher would follow proper supervision of the study, the following delimitations were established to make supervision of the study manageable and to narrow the scope of the study. Time constraints limited the research to be conducted the first semester of the academic school year as determined by the Lebanon Special School District calendar. Testing began the first two weeks of August 2014 with the intervention following in mid-August and ending in December 2014. Post testing was conducted following the conclusion of the intervention study in December in order to collect and analyze data before students departed for winter break. The original intervention was planned for 14 weeks based on previous writing research studies; however, these parameters defined the study to 13 weeks in order to complete the intervention and all planned assessments within the determined timeframe.

Pre-kindergarten students were assigned to one of nine classrooms depending on their residential district zoning. After school and class assignments were made, students were randomly selected to participate in the experimental and control groups per classroom using an online randomization tool. ELL and SWD identified students were also stratified and assigned to either group. A small number of students were identified for special education services during the timeframe of the study and were retrospectively identified in the data spreadsheet.

Definition of Terms

The following definitions will be helpful in assisting the reader in interpreting the research data:

- Academically at-risk student - Student entering school without skills necessary for academic success in reading and writing literacy.
- Constructivist view - perspective that young children construct their own knowledge and understanding of the world through experience.
- Cultural tools - mental tools or environmental tools for learning such as an alphabet chart.
- English language learner (ELL) - child that is learning to speak and write English as a second language.
- Emergent literacy - term to explain a child's understanding of reading and writing as they are beginning to write and read words, involving phonological awareness, alphabet knowledge, and concepts of print.
- Emergent writing - a child's understanding that writing is a form of communication and can convey meaning and a message.
- Interactive writing - writing activity that models how written language works while engaging students in the actual writing process by using the "share the pen" strategy.
- More Knowledgeable Other (MKO) - adult or peer that gives support to a student allowing them to achieve literacy success in their zone of proximal development.
- Pre-Kindergarten (pre-k) - four-year-old student enrolled in school.

- Private speech - student speaking to himself or herself to guide their own thinking and behavior.
- School ready - student having the necessary literacy background and experiences with reading and writing enabling them to be prepared for school entry.
- Scaffolded writing - process of providing support to a learner by an adult or peer during the writing process, enabling the student to complete a task beyond his or her own capability when working independently.
- Scaffolding - giving individual support to a student during a writing activity.
- Sociocultural literature – thematic books designed for children highlighting aspects of cultural or social diversity.
- Students with disabilities (SWD) - students eligible for special education services as identified for a speech or language delay.
- Zone of proximal development (ZPD) - the distance between the student’s actual developmental level of learning and potential level of learning.

Outline of the Dissertation

This dissertation is comprised of five chapters, a bibliography and appendices. Chapter 1 provides an introduction, information on the background and history of early literacy, research questions, a rationale for the importance of the study, and an overview of methodology. Chapter 1 concludes by noting the delimitations of the study and defining some special terms used. Chapter 2 presents a review of the theoretical and empirical literature on early literacy beginning with a framework for emergent writing. Chapter 2 includes varied writing approaches, reading effects using scaffolded writing, and a summary of what the previous research seems to mean and how it relates to this

study. Chapter 3 outlines the methods used in the research, procedures for gathering the data, and a description of the materials used in the research. In chapter 3, the reader is provided a description of the participants, setting, measures and methods for conducting and analyzing the research data, and timeline. Chapter 4 presents the findings of the research and a summary of what the data reveals. Chapter 5 presents a summary of the results, discussion of the findings, rationale for the conclusion, implications of the research, strengths and limitations, and recommendations for further research. This summary outlines the five chapters that comprise the dissertation.

CHAPTER II

Literature Review

This literature review examined quantitative, qualitative, and mixed-methods studies to find best strategies for teaching writing to young learners. First, this literature review discusses various frameworks for establishing current student writing skill levels, and then continues with a major focus on writing methods and approaches conducted in elementary grades. Next, the review discusses research studies specifically addressing interactive writing and scaffolded writing techniques with emergent learners, including interactive writing with diverse student populations such as English language learners and Students with disabilities. Lastly, the chapter concludes with researched-based guidelines for writing instruction along with other expert perspectives of scaffolding writing strategies.

Article Search Process

Early childhood writing methods are limited in research addressing quantitative measures and qualitative measures. This area of research is needed to inform educators of writing techniques that enhance the reading development of emergent readers. The current research of writing instruction was conducted in order to answer the question of whether writing instruction for emergent learners using scaffolding techniques promotes reading skill attainment. The literature review was developed through a systematic process of selecting literature according to qualifying criteria. All articles examined were peer reviewed or refereed examining research of direct approaches of teaching writing and scaffolding writing with peer or adult support. All study participants were in early grades of pre-k and/or kindergarten with the exception of

five studies conducted in the first through sixth grades. Studies in this review did not include early childhood scaffolding techniques with computer technology or subject areas other than literacy because the scaffolding techniques used did not apply to writing instruction. Systematic searches of ERIC, PsychINFO, Reading Research Quarterly, Info Search, and Google Scholar databases were conducted. Search terms included *scaffolded and scaffolding writing strategies, emergent literacy, pre-k and kindergarten, early childhood, reading and writing connection, early reading, elementary education, children's literature and interactive writing, and sociocultural literature and young children*. The initial search produced 2,185 peer-reviewed articles between the years of 1953 and 2014. All abstracts were reviewed and of those articles, 235 were fully read to determine if they met the inclusion criteria for the review. Only 19 studies met the inclusion criteria. Additional articles were located by searching bibliographies of primary source articles. The following section reviews the specific strategies identified in the search. The review begins with a section on writing frameworks to establish a literacy concept of developmental processes of emergent writing with young children. The review continues with research-based approaches for teaching writing and the research regarding reading effects using a scaffolded writing process. This section concludes with research experts' perspectives of scaffolded writing principles that should be included in an effective writing instructional program. This investigation found thirteen studies addressing the topic of writing instruction in the emergent literacy area, five studies involving participants within grades 1-6, and one study of grades 1-12. Overall there are nine qualitative studies, six quantitative studies, two meta-analysis, and two mixed-method studies. An overview of the studies reviewed is presented in Table 1.

Table 1: Writing Intervention Primary Studies

Study	Intervention	Study Description	Fidelity Reported	Length	Participant Description	Standardized / Developed Measure	Results	Standardized Measure Effect
Bodrova & Leong, 1998	Scaffolded Writing. Method used two techniques-materialization and private speech.	Qualitative	Samples analyzed by 3 different raters	May-August	34 K students. At-risk	Observation & anecdotal notes. Writing samples analyzed by Gentry & Gillet, 1993-levels.	Scaffolded writing produced more advance writing through invented spelling, and increased length and quality of messages	Bodrova & Leong, 1998
Bodrova, et al., 2003	Scaffolding writing program by McREL. Based on Vygotsky's approach- 7 principles for instruction in preschool class Began with name writing Used ZPD Use activities that Integrate content, linguistic, or social skills	Quantitative Mixed Methods	Not reported	Data collected from Oct. to May	Pre-K & K ELL, Low SES, Sped, & regular classroom students 70 K teachers Followed up with 2 classrooms in Colorado and also consult with 2 classrooms in Iowa	Early Literacy Advisor (ELA)- a computerized system for identifying literacy skills in 4-6 year olds. Gives current literacy level, ability to recognize letters, connect sounds to symbols, and use print conventions such as tracking sentences from left to right	Scored significantly higher than students in non-participating rooms. Overall student achieved. Increased 56% in letter rec., 65% sound to symbol correspondence, 70% instant word recognition, 54% in reading concepts	NA
Button, Johnson, & Ferguson, 1996	Interactive writing	Qualitative	Not reported	Daily interactive lessons starting at 15 minutes, increasing to 20 to 30 minutes	17 K students- 2 Asian, 8 Hispanic, 6 White, & 1 African American. 15 low SES	Clay's Observation Survey comparing September scores to May scores	13 of 17 had growth in all measures - 90%. Hearing sounds in words with score of 9.8 mean. Spring mean score was 29. Writing vocabulary grew from 4.8 mean score to 23.9	NA

Table 1: Writing Intervention Primary Studies (continued)

Clippard, & Nicaise, 1998	Writer's Workshop. Quasi-experimental intervention	Quantitative Quasi-experimental	Interrator reliability of $r = .9$	7 months 60 minutes 4x week	4 th & 5 th grade 27 Learning disabled students (17 WW & 10 Writing Across Curriculum)	TOWL-2 Writing Samples Academic Self-Efficacy Inventory Writing Self-Efficacy Survey	Not significant between 2 groups. Significant on writing samples- pre & post. Not significant on self-efficacy	Not significant
Craig, 2006	Interactive writing-plus treatment 1). text experience, response to text using interactive writing, and letter-sounds instruction. 2). Metalinguistic games plus-PA curriculum (Share the Pen)	Quantitative	Not reported	20 min., 4x week, 16 weeks. 1,280 total minutes	87 K white, middle class students	*Snider's test of Phonemic Awareness *Hearing Sounds in Words -COS *Developmental Spelling. *Woodcock Reading Mastery test-revised word attack subtest. *Woodcock reading mastery test-revised word ID subtest	Scaffolding and modeling of PA, AP, & Word building enhanced kindergarten children's word reading but also their reading comprehension	Word ID $d = .34$ -low $d = .50$ -mid $d = .77$ -high Passage comp. $d = .49$ -low $d = .65$ -mid $d = 1.03$ -high
Dunsmuir & Blatchford, 2004	Semi-structured interviews, questionnaire, observation, schedules and standardized assessments Writing samples Associations between measures and continuity over time were assessed using multiple regression analysis	Mixed method longitudinal study	Yes	1993-1996	60 4-7 year old children- Urban primary schools - special needs 24% 29%, 43%, & 19%. ELL - 1.2%, 1.4%, 4.%, & 2.%. (schools) SES: 9.4%, 25%, 32.%, and 12.%. (schools)	Writing samples Semi-structured interviews, questionnaires, observation schedules and standardized assessments: WPPSI-R BAS Concepts about print test (Clay, 1979) and Letter Identification Test (Clay, 1979). The British Ability Scales (BAS) Copying Subtest Name-writing	Development of handwriting fluency appears to be significantly related to the development of compositional skill and fluency for children in the early stages of learning to write	Summary results Total outcome scores ($F = 8,748$, $p < .001$)

Table 1: Writing Intervention Primary Studies (continued)

Graham, McKeown, Kihara, & Harris, 2012	Drawing on a general model of development proposed by Alexander (1997), writing strategies, knowledge, skills, and motivation	Meta-analysis	Yes	NA	Elementary grades	1-6 grades Each group coded for grade, participant type, genre, treatment, and control conditions & type of publication	Scaffolded pre-writing activities – 8 studies. Peer assistance- 4 studies. Product goals- 7 studies. Assessing writing- 14 studies. Adult feedback- 5 studies.
Graham & Sandmel, 2011	Process Writing (planning, translating, & reviewing)	Quantitative Meta-analysis- 29 studies	NA	NA	Grades 1-12 Regular education and at-risk/struggling students	NA	Overall writing quality of regular education students improved Not significant with at risk students and motivation
Harris, Graham, & Mason, 2006	SRSD (Self-regulated strategy development)	Quantitative	.80 fidelity reported for inter-rater reliability	6 months, 3x a week, 20 minute sessions Total 10.3 hours	2 nd grade. Mean age of 7.3 months 66 children attended urban school district in Washington, DC area	TOWL-3	No differences between 2 SRSD conditions on majority of writing and knowledge Students wrote longer and qualitatively better on posttest stories Peer support did have positive effects.

Table 1: Writing Intervention Primary Studies (continued)

Henderson Many, Wellborn, & Ward, 2002	Teacher demanding the student to write more, stretched out words so that the student could hear all the sounds, drew the student's attention to details by helping her relate picture to words, and modeling	3, 4, & 5 year old pre-school	Qualitative	Triangulation across data sources, across time on multiple occasions, and across researchers with member checking and peer debriefing. Also tape recorded group discussions and transcripts.	"Purpose of study-to examine the use of scaffolding within a preschool class in order to understand better the roles that scaffolding played in nurturing the develop- ment of young children's literacy repertoire"	1 year	Grade: Multiage preschool classroom, school of diversity	Drew on traditional methods used in qualitative inquiry for collecting and analyzing data, but teacher- researcher methodology also was grounded in on- going, in- depth discussions
Hough, Hixson, Decker, & Bradley- Johnson, 2012	Modification of Quick- write, a strategic writing program to brainstorm, plan, draft & revise in timed session		Qualitative	Inter-rater reliability 90% and Story Grammar Element Rating Scale and 96% for TWW	Intense (20-30 minute) sessions 4-5 times weekly with one- on-one instruction	2 nd grade 6 seven-year- olds below 25 th percentile, poor writers, and not in SPED	Story Grammar Rating Scale assessed inclusion and quality of parts of each writing probe CBM-W Total Words Written	The number of story grammar elements included in student stories increased, but rate of student writing did not

Table 1: Writing Intervention Primary Studies (continued)

Jones, Reutzell, & Fargo, 2010	Writers Workshop compared to Interactive Writing	K	Quantitative	Fidelity checklists ranged 95%-98% agreement	16 weeks 15 minute writing intervention sessions 20 total hours	151 K students. Western city school district w/ 33% diversity, 27% ELL, and 44% low SES Random selection of schools	CTOPP; Wagner, Torgesen & Rashotte (1999)-assessed phonological awareness & word Reading OSELA; Clay (2002)-assessed Alphabet knowledge; TOWRE;	Correlations ranged .90 to .76 Correlations ranged .89 to .59 Correlation ranged .83-.76
Justice, Kaderavak, Fan, Sofka, & Hunt, 2009	Print referencing intervention- verbal and non-verbal techniques to heighten interest in print by asking questions, tracking finger, and commenting about print	106	Quantitative. Randomized control trial	Fidelity coding catalog (FCC) is observational tool used to document if print target skills were referenced during the lesson	2005-2006 school year 120 large-group storybook reading sessions 4x week 30-week period	106 Preschool students with at-risk factors of poverty, family stress, or developmental problems	Upper-case alphabet knowledge & name-writing ability subtests. Preschool word and print awareness assessment.	Gains in children's print concept knowledge, alphabet knowledge & name-writing ability

Table 1: Writing Intervention Primary Studies (continued)

King, 2012	Writer's Workshop (journal writing, conferencing, and share time)	Qualitative	Not reported	Yearlong writing program. Journal writing 20 minutes a day, plus conferencing one day a week	King, 2012	Writer's Workshop (journal writing, conferencing, and share time)	
McGee & Ukainetz, 2009	Description of successful method of 3 levels of scaffolding phonemic awareness instruction used in preschool and Kindergarten	Qualitative.	Not stated.	Not stated	Pre-K & K 30 classes Preschool and Kindergarten. 90% low SES	Classroom teacher's lessons transcribed for patterns of instruction.	Most Preschool and K students at varying levels of skill made progress in acquiring complex levels of phonemic awareness
Molfese, Beswick, Molnar, & Jacobi-Vessels, 2006	Study explores two components of procedural knowledge involved in letter knowledge (letter naming & letter writing) compared to conceptual knowledge (knowledge of print concepts and book conventions)	Quantitative	Writing tasks scored independently by 2 different scorers, based on Sulzby et al., 1989	Longitudinal study Students from beginning of K to end of 3 rd grade	Preschool children (4 and 5 year-olds)/ 79 Low-income students, typically developing, English speaking children	DAS: Preschool level test PPVT-III WRAT 3 Writing tasks-name writing, writing letters, & writing numbers 3 copying tasks-Coping tasks (Sulzby)	Skills in letter naming were related to writing skills. Letter-naming skills were related to number writing skills (both dictated and copied). Name writing and letter writing were moderately correlated

Table 1: Writing Intervention Primary Studies (continued)

Rowe, 2013	Write Start! Writing Assessment	Qualitative	Not stated	2 days a week, 40 total days	2-year- olds 9 months/ 18 students: 98% African American & 2% Caucasian from low SES homes	Write Start! Writing Assessment Using grounded theory analysis	Children construct conventional hypothesis about writing during preschool years. Students showed differential timing
Williams & Lundstrom, 2007	Word study and Interactive Writing. Ruth's lesson format- Word Matters, (Pinnell & Fountas, 1998) program and district's Dolch sight word list of spelling words	Qualitative	Data analyzed by 2 different researchers-spelling strategies chart and coding sheet for each child	Oct. 15- May 10	1 st grade Title 1 at-risk students	Marie Clay observation survey. Daily lesson plans, reflective notes following lesson plans, field notes, weekly observations during journal writing, Children's journal entries	Williams & Lundstrom, 2007
Wiseman, 2011	Interactive Read Aloud	Qualitative	Not stated	9 month study Daily read aloud sessions 25-45 minute sessions 4x week Oct.-May	K Urban public school- African American & low SES	Ethnographic study involving field notes (classroom observations of instruction & interactions), 54 audio-taped read alouds, student journal writing, teacher & student interviews	Data analysis revealed knowledge was constructed through dialogue & classroom interaction in 4 ways: confirming, modeling, extending ideas, & building meaning

Note. NA=None Applicable. WW= Writer's Workshop. AP= Alphabetic Principle. PA= Phonemic Awareness. ES= Effect Size.

Writing Frameworks

Several frameworks have been used to consider the role of writing in young learners' development (see Appendix A for a summary of writing frameworks). For instance, Gentry and Gillett (1993) defined stages of spelling development that correspond with the following four writing developmental stages. Rowe (2013) presented descriptive information on these four features of writing in her observational research of writing designs and tasks while working with children in urban childcare centers from ages two to five-year-olds. One of the four features of writing studied was name writing. Findings showed that two-year-olds usually scribble their names, and three-year-olds typically use their own personal style of manuscript or cursive for name-writing, while four-year-olds were more likely to use conventional letters for writing their name versus using conventional and inventive spelling when composing open-ended messages (Rowe, 2013). This research shows how a student's name is personal and relevant, causing the child to learn the letters of their name first. Rowe's study also emphasized that children progress through writing stages at different rates, and can also show movement forwards and backwards as they progress toward writing development. Rowe developed and used an emergent writing assessment called the Write Start! Writing Assessment. The writing form assessment is based on observation of early childhood writing as children's development passes through specific categories (Rowe, 2013). The Write Start! Assessment can be used as an assessment task or to monitor progress on a formative basis, as a child progresses from drawing (category 2) and scribbles (category 3) to the child writing random letters and letters in their name (categories 8 & 9), then to the child demonstrating sound/syllable correspondence, phonetic representation, and some

inventive spelling (category 14), to the final category of the child using conventional spelling (category 16; Rowe, 2013). Assessments of this type are important to early childhood practitioners because they reflect the small increments of achievement important in evaluating the writing growth of beginning writers.

Criteria for evaluating early stages of writing are also needed to determine the level of independent writing in order to scaffold learning to the next level. Cabell, Tortorellie, and Gerde (2013) provide four levels for evaluating children's early writing in a method that enables teachers to determine each child's writing level. These four levels are:

1. Drawing and Scribbling - Children's representations of writing begin with directionless marks leading to environmental text.
2. Letters and letter-like forms - Children use letter-like forms and strings of random letters, beginning to understand letter representations convey meaning and to develop phonological awareness.
3. Salient and beginning sounds - Children begin to use invented spelling and later writing initial sounds of words.
4. Beginning and Ending Sounds - Writing progresses with students adding the additional ending sound then medial vowel sound to words, and developing their phonemic awareness and concepts of print (Cabell, Tortorellie, & Gerde, 2013).

These writing levels correspond with the progression of writing found in the Tools Scaffolded Dynamic Writing Assessment (Bodrova & Leong, 2011) which scaffolds children's writing on a continuum from drawing a picture and name writing, then to the

student drawing lines to help remember their voiced message, and finally to writing initial and ending sounds of words.

Trehearne (2011) described seven broad categories of emergent writing as developmental with the same conclusion as Rowe (2013) that “not all children pass through each and every category, and many go back and forth between or among categories as they develop” (Trehearne, 2011, p. 29). Similar categories are defined as: (a) drawing as writing, (b) scribble writing, (c) letter units or forms, (d) nonphonetic letter strings (random letters), (e) copying from environmental print, (f) invented spelling, (g) conventional writing (Trehearne, 2011). Young learners begin to use inventive spelling as they write, which requires that the child understands letters and sounds correspondence (alphabetic principle) and print concepts (Trehearne, 2011).

Writing Approaches

There are differing approaches to writing instruction in research involving elementary students. Research conducted on writing instruction in early grades varies from name and letter writing, to self-regulated strategy develop, and to process writing. The most common methods for teaching writing in pre-k through first grade are writer’s workshop, interactive writing and scaffolded writing.

Name writing and letter writing. Name-writing skills have been found to be strong predictors of reading skills (Weinberger, 1996). A child’s name has a special relevance to him/her. Children are more accurate in naming a printed letter that corresponds to the letters of their name than in naming other printed letters (Treiman & Broderick, 1998). Learning to write the letters in their own name first is actually a motivator for students to begin to learn other letters of the alphabet for writing purposes

(Ray & Glover, 2008). Molfese, Beswick, Molnar, and Jacobi-Vessels (2006) studied the development of 79 preschool children with letter naming and letter writing (writing their name, dictated and copied letters and numbers). In this study, name writing was compared to copying letters and numbers using various measures. Children's scores were higher for name writing versus random letter writing. Molfese et al. (2006) found that name writing and letter naming were moderately correlated ($r = .54$) which shows a relationship between children learning to write letters and their own name. Another finding from this research showed children living in lower SES homes scored lower on letter naming, word reading, and writing tasks, than children not living in low SES homes (Molfese et al., 2006). Considering these findings, name writing was included in the current study as both an assessment and as instruction in the interactive writing portion of the intervention. The four-year-olds in the current study were predominantly children of low-income families.

Self-regulated strategy development. Harris, Graham, and Mason (2006) researched a Self-Regulated Strategy Development (SRSD) instructional model designed to promote development of children's strategic writing behavior, knowledge, and motivation. SRSD emphasizes student self-regulation through the use of specific writing strategies that enable students to complete a writing task. This particular study paired SRSD with peer support in an experimental design. This quantitative research involving 273 struggling second graders in a high poverty urban area, randomly assigned students to three conditions: SRSD instruction only, SRSD plus peer support, and comparison using the Writers Workshop model. No differences were found between two SRSD conditions on the majority of writing and knowledge variables, but adding the peer

support component to SRSD model did have positive effects ($d = 0.87$). Peer support can take a number of roles such as identifying how strategies could be used in writing, applying those strategies during discussions about writing, and giving support as needed. Support from a more knowledgeable peer contributed to students being able to write longer and qualitatively better posttest stories, and adding more basic elements in compositions (Harris et al., 2006). Peer support added to the interactive writing creates an even greater influence on student writing achievement.

Process writing. Another approach to teaching writing is process writing, which consists of some basic principles of planning, writing, editing, and revising. Process writing engages students to write for authentic purposes and over an extended period of time, and also involves instruction through mini-lessons and student conferencing (Graham & Sandmel, 2011). This meta-analysis included 29 experimental and quasi-experimental studies with students in grades 1-12. Process writing showed significant results with students in general education classes as compared to skills instruction and other writing curriculums, and overall quality of writing ($d = 0.34$). However, the process approach to writing did not improve overall writing quality with students either at-risk or struggling writers ($d = 0.29$), nor did the approach show significance with regards to student motivation ($d = 0.19$). These findings point out the need for a writing approach that accommodates the needs of all learners and is also motivating for students.

In a qualitative study of second grade students, a similar approach evaluated a strategic writing program involving process steps of brainstorming, planning, drafting, revising, and final revision (Hough, Hixson, Decker, & Bradley-Johnson, 2012). This

intervention program, a modified version of Quickwrite by Michael Maloney, teaches many elements of SRSD but differs in that students are timed during sessions. Intense individual lessons of 20-30 minutes were taught in 8-12 sessions over a three-week period. Strategic writing lessons consisted of brainstorming, planning, drafting, and revision in timed sessions. Research results found the number of story grammar elements included in student stories increased, but rate of student writing did not (Hough et al., 2012).

Writer's workshop. When the Writer's Workshop approach was examined in a quasi-experimental intervention study of fifth- and sixth- grade learning disabled students (Clippard & Nicaise, 1998), no significance was found when comparing Writer's Workshop to the regular writing across the curriculum approach in standardized testing. Neither was significance found in student efficacy measures. Students in both the control and experimental groups made progress in writing achievement. Participants in the Writer's Workshop group did perform significantly higher on process writing samples in proficiency terms as evidenced by length of words and paragraphs, use of vocabulary, editing skills, and quality of writing (Clippard & Nicaise, 1998). Noting the writing effects with middle school students, another study involving Writer's Workshop was examined to see possible significance with younger students.

King (2012) used a modified version of Writer's Workshop with her classroom of 12 preschool students to show how the structure could be useful in fostering writing growth with young learners. The yearlong micro-ethnographic study took place in an urban public school with students of special needs or students living in families where more than one language was spoken. King's approach to writing included three primary

components of Writer's Workshop: student journal writing, teacher conferencing, and student share time. The teacher approached instruction with the emergent writers by encouraging attempts at writing, modeling the journal writing process, and allowing experimentation with writing as it developed through stages of drawing and labeling pictures and to writing letters. This developmentally appropriate approach to teaching emerging writers is promoted with students of preschool age by the International Literacy Association (ILA) and the National Association for the Education of Young Children (NAEYC, 1998). In their joint position statement, the ILA and NAEYC provided recommended teaching practices that support literacy learning through engaging with adults in conversations with individual children; modeling writing behaviors and fostering enjoyment of writing experiences; and providing opportunities for children to talk about reading and writing. Results of this qualitative research showed that emerging writers were able to use this structured process to develop skills to write intentionally and for a variety of purposes. Their progression of writing attempts included drawing, labeling pictures, and writing letters to represent what writers do to communicate their thoughts.

Interactive writing. Building on the constructivist concept of learning, interactive writing is an approach to literacy instruction where students construct text that can be personal and relevant to their lives as opposed to teaching isolated literacy skills out of context (Button, Johnson, & Ferguson, 1996). Interactive writing is a language experience approach intended to create meaningful text in collaboration with emergent writers, while teaching emergent literacy skills. Although interactive writing is a group experience, teachers can scaffold individual learning by making the experience relevant

to individual student learning through choice of book selection. Text that is meaningful and relevant to a child's life can motivate young writers to attempt writing tasks with enthusiasm. It is also a good approach for meeting the needs of at-risk students by crafting instruction to fit the student current learning level by directly teaching language conventions and print concepts. Over 90% of the kindergarten students in this classroom exhibited growth in all areas of Clay's Observation Survey and were able to read with better accuracy than before (Button et al., 1996).

Interactive writing is a form of shared writing involving construction of text in a writing event where the teacher acts as a scribe for the group of children who construct the text collaboratively (McCarrier, Pinnell, & Fontas, 2000). With this approach, the teacher scaffolds students' emergent knowledge of print concepts through dialogue, questioning and direct instruction (Button et al., 1996). This literacy event may support emergent literacy skills of phonemic segmentation, alphabetic principle, and print concepts when the teacher works with the student in their instructional zone to scaffold learning until they are able to write independently (Williams & Pilonieta, 2012). Another primary function of interactive writing is to advance spelling skills by providing meaningful opportunities for students to write the letters for sounds they hear in words (Williams & Lundstrom, 2007). A difference of interactive writing is that the actual writing is orchestrated between teacher and students, with opportunities for students to actually hold the pen and write letters, words, and sentences (McCarrier et al., 2000). Just as importantly, "the process demonstrates in a powerful and immediate way the reciprocal nature of reading and writing" (Button et al., 1996, p. 451).

Key features of interactive writing include:

1. Children grouped based on learning goals
2. Writing for authentic purposes
3. Sharing the task of writing
4. Using conversation to support the process
5. Creating a common text
6. Using the conventions of written language
7. Making letter-sound connections (phonemic awareness)
8. Connecting reading and writing
9. Teaching explicitly the literacy concept (McCarrier, et al., 2000)

Interactive writing enables both the teacher and students to construct text from everyday experiences or storybooks, and can be used to integrate any content area of math, language arts, science, social studies, or even art and music (McCarrier et al., 2000). At the beginning of the school year, the teacher leads interactive writing by choosing the writing topics, setting up procedures for using tools, teaching concepts of print, and supporting text by drawing a line for each word in a sentence. The teacher scaffolds learning by building on these practices and giving students more ownership during the writing process. Students collaboratively create the text and hold the pen to write letters of words, while the intensity of literacy skills increases to letter naming, phonemic awareness, encoding words and using writing some sight words (McCarrier et al., 2000).

Craig (2006) investigated the effects of interactive writing as compared to an approach using linguistic games with kindergarten students. The two instructional

approaches to writing studied the variables of phonological awareness, alphabetic knowledge, and early reading skills in this 16-week intervention study. The first writing approach in this quantitative study was interactive writing- plus, which consisted of: (a) text experience, (b) interactive writing experience (Share the Pen), and (c) letter-sound instruction involving word building and phoneme segmentation. The second approach was *metalinguistic games-plus*, which used a phonemic awareness classroom curriculum of linguistic games, and additional letter-sound supplement with a synthetic approach to code instruction, however no writing was involved (Craig, 2006). Seven quantitative measures were used in this control group design with random assignment involving 87 middle class students. Results of standardized tests revealed that the interactive writing group performed as well or better than the meta-linguistics group with regards to passage comprehension and word identification. There was no significance in the other five literacy measures. In addition to explicit instruction and modeling, scaffolding instruction was adapted to fit student skill level and provide individualized instruction to meet the literacy needs of each child.

In a similar study using qualitative measures, interactive writing and word study strategies were used to intervene with six first-grade at-risk Title students in an urban area (Williams & Lundstrom, 2007). The design of this research was based on Wertsche's concept of mediated action, which suggests that students use cultural tools such as word study instruction to mediate their spelling and writing experiences. The MKO adult and peers scaffold the learner's understanding of spelling strategies when participating in word study activities. Students participate in writing events while constructing group oral messages and incorporating learned conventions of print into the

message. In the study, the teacher used a lesson format based on Fountas and Pinnell *Word Matters* program (1988) combined with the Dolch sight word list of 144 words. Ten spelling strategies were explicitly taught during interactive writing lessons using a word wall (physical cultural tool) and other cognitive processing practices (Williams & Lundstrom, 2007). Data collection and analysis of five kinds of evidence included lesson plans and reflective notes, field notes of interactive writing activities, and weekly observations of children's writing journals plus the Marie Clay Observation Survey. Analysis of student journal entries revealed evidence that many of the spelling words became part of student writing vocabulary. It also demonstrated that both word study and interactive writing instruction support emergent reader's spelling and writing achievement (Williams & Lundstrom, 2007).

Interactive writing instruction was compared to Writer's Workshop in recent experimental study by Jones, Reutzel, and Fargo (2010) studied 151 kindergarteners' acquisition of early reading skills using the two writing methods. Interactive writing instruction included negotiating a writing topic and details, teacher and students constructing a sentence or story and rereading the text (Pinnell & Fountas, 2001). Interactive writing group instruction targeted print concepts, phonemic awareness, phonics, and high-frequency words. Writer's Workshop instruction included student independent writing on a self-selected topic, teacher-student conferencing, and then sharing the writing with peers and teacher (i.e., author share time). Mini-lessons taught on targeted skills are a component of Writer's Workshop, but this component is not included in interactive writing. Data collection during a 16-week period found growth of phonological awareness, alphabet knowledge, and word reading in both writing

instructional practices. Writer's Workshop and interactive writing were both found to help students grow in their literacy skills (Jones et al., 2010).

Interactive writing and storybook reading. In a randomized control trial to determine effectiveness of print referencing intervention compared to teacher approach of reading storybooks, Justice et al. (2009) studied 106 preschool students with at-risk factors of poverty, family stress, or developmental problems. Students were engaged in 120 large-group storybook-reading sessions over a 30-week period with instruction focused mainly on print knowledge. The print referencing intervention of both verbal and non-verbal techniques heightened children's interest in print by asking questions about print, tracking their finger along text, and commenting about print. Participation in print-focused reading sessions resulted in children's gains in print concept knowledge ($d = 0.50$), alphabet knowledge ($d = 0.56$) and name-writing ability ($d = 0.42$) compared to reading sessions with typical reading styles (Justice et al., 2009). No significant difference was found with four language measures. This intervention was different from previous research in that the storybook reading element was added to instruction, and the focus of instruction centered on print knowledge.

Wiseman (2011) described the impact of interactive storybook read alouds by allowing students to construct knowledge and literacy. In this ethnographic research of 21 kindergarten students, the teacher created literacy opportunities for students through dialogue, student interaction, daily read alouds and journal writing. Multicultural literature was chosen for the read aloud lessons in order to meet student interests and recognize cultural relevance. The interactive read aloud approach provided literacy opportunities for teacher use of higher order questioning, modeling fluent reading, and

scaffolding comprehension strategies and textual features. Data collection consisted of audiotaping and transcribing 54 read aloud sessions. A secondary form of data collection included journal writings and informal interviews of teachers and students. Analysis revealed knowledge was constructed in four areas: confirmation of student statements to support responses, modeling the think-aloud process for students, encouraging students to extend their literacy ideas, and building meaning together in a social context (Wiseman, 2011). These studies show that adding the storybook read aloud to interactive writing could support young learners literacy skill achievement.

Scaffolded writing. The scaffolded writing technique for emergent learners includes assistance from an adult or peer during the writing process using cultural tools to break down chunks of learning into manageable pieces (Bodrova & Leong, 2007). The support given to the learner is gradually reduced until the learner reaches their learning task. Support given by the MKO consists of instruction, modeling, feedback, questioning, materialization, or private speech. The Tools of the Mind curriculum, using scaffolded writing instruction with play planning, involved the child voicing a message, drawing lines as an external mediator, and using private speech to create a personal message (Bodrova & Leong, 2001). According to Bodrova and Leong, as the child progresses in the advanced writing stages the teacher role adapts to further grow student literacy skills with assistance in writing phonemes in each word, isolating the initial, ending, and medial sounds (phonemic awareness), and by rereading the message (oral language). Teacher modeling and individual conferencing allow the student to edit their personal message while moving to the next step with phonemic awareness instruction. Pre-k teachers can use the Dynamic Assessment tool to target support and guide student

learning and individualize each student's growth daily along a developmental learning trajectory (Bodrova & Leong, 2011). Because students are scaffolded during writing tasks, children typically move through stages at different rates and at their own pace. According to the training manual (Bodrova & Leong, 2001), the scaffolding moves the student along a developmental continuum consisting of stages. The child begins by drawing a picture and verbalizing a message, to drawing lines to represent each word, and eventually to writing the message independently. The words in the message advance along the progressive stages, as demonstrated by other research (Cabell et al., 2013; Rowe, 2013). The child begins by first writing sentences with words containing only the initial sound, later adding the ending sound, and eventually the medial vowel sound. The teacher can monitor daily progress using a writing chart to designate the current level of writing (Bodrova & Leong, 2011). According to the continuum guidelines, achieving the initial sound or ending sound stage is an expectation for pre-k students. Students should be proficient with voice-to-line match and understand left to right directionality before beginning to write words. These developmental writing stages and curriculum correspond with the developmental writing stages of Cabell et al. (2013) and writing categories of Trehearne (2011). The Tools of the Mind curriculum has a shared writing experience but does not have interactive writing instruction for students which Craig (2006) found to be effective in building young learner's reading skills of word identification and passage comprehension. Neither does the Tools of the Mind curriculum have the storybook reading interactive instruction found by Justice et al. (2009) to show an increase preschool children's gains in print concept knowledge, alphabet knowledge, and name-writing ability.

Peer and adult scaffolding support was found to be significant in a meta-analysis of writing instruction research for 115 effects spanning grades one through six and targeting 13 different writing interventions (Graham et al., 2012). This research included 33 studies pertaining to scaffolded writing strategies which included prewriting activities, peer assistance, product goals, and assessing writing with adult and peer feedback. Overall, the research found writing strategies, knowledge, skills, and motivation play an important role in students' growth as writers. Specific to studies of the scaffolding writing activities, all showed significance, but the strategies with the highest effect sizes were peer assistance ($d = 0.89$), adult feedback ($d = 0.80$), and product goals ($d = 0.76$). Additionally, effect sizes for the remaining three strategies were moderate-to-low with prewriting activities ($d = 0.54$), assessing writing ($d = 0.42$), and peer/self feedback ($d = 0.37$). Peer assistance with writing produced the greatest gains which means having students work together to enhance writing quality (Graham et al.). Tools of the Mind scaffolding writing instruction does include peer assistance and adult scaffolding with feedback on a one-to-one basis.

The use of naturalistic inquiry to explore teacher use of scaffolding was the purpose of another qualitative study for eight preschool children (ages three, four, and five). This research explored literacy interactions and the roles that scaffolding played in student writing development. Following Vygotsky's theory of ZPD, the focus should concentrate on the child's level of development to their level of potential achievement (Henderson et al., 2002). The sociocultural approach looks at the child's development from both a social and cultural perspective. Findings of the research showed how the use of literacy scaffolding created three different themes: academic focus, intellectual focus,

and emotional focus. However, scaffolding can take on many different forms that support the child in constructing their own literacy learning.

McGee and Ukainetz (2009) described a successful method of scaffolding phonemic awareness instruction used with preschool and kindergarten children. While working with an *Early Reading First* project school, scaffolding was defined in terms of the communication the teacher gives to guide students to the correct answer (McGee & Ukainetz, 2009). Three levels of scaffolding were categorized as students were able to achieve learning at different levels of literacy, specifically phonemic awareness knowledge. At the beginning of a new skill, students receive intense scaffolding, lessening to moderate support and then minimum support with phonemic awareness. Most of the 30 classrooms of preschool and kindergarten students, with varying levels of skill, made progress in acquiring even complex levels of phonemic awareness despite the high percentage (90%) of students from low socioeconomic status backgrounds. Results showed that approximately 75% of preschool students entering kindergarten could isolate some initial sounds in words and most students could segment words into at least two or three phonemes. This study supports the use of scaffolding student learning with young learners and especially with students of low SES.

The Scaffolding Early Literacy program, based on Vygotsky's cultural-historical theory, stresses the importance of providing support for young children as they learn and master new skills (Bodrova et al., 2003). On-going professional learning for teachers emphasized foundational skills of phonological awareness, print concepts, alphabet recognition, and the uses of reading and writing. At-risk students were able to achieve success in emergent reading skills when provided scaffolded support (Bodrova et

al., 2003). Results of the research suggested that scaffolding is appropriate for all learners, but especially students of low SES, special needs, and minorities (Bodrova et al., 2003). Some of the underlying principles of scaffolding early literacy in preschool classrooms as noted by Bodrova et al. (2003) include meeting the child's developmental needs, supporting construction of knowledge through social interactions, and scaffolding student learning from dependence to independence. Kindergarten students from the Mississippi Bend Area district scored significantly higher than non-participatory schools in the areas of letter identification (increase of 56%), sound-to-symbol correspondence (increase of 60%), and 70% increase in instant word recognition and reading concepts (Bodrova et al., 2003).

Scaffolded writing for English language learners. English language learners (ELL) need intentional and explicit instruction with emerging literacy skills provided in an interactive social setting (Williams & Pilonieta, 2012). The interactive writing technique promotes a social event for students to create authentic text. This constructed text is the instructional foundation for learning emergent literacy skills of oral language, phonemic awareness, alphabetic principle, vocabulary, print concepts, and comprehension. As the teacher identifies the learning level of students, interactive lessons can cater to each student's ZPD to scaffold learning through reading literature and writing to text (Williams & Pilonieta, 2012). Studies of kindergarten and first grade students have shown interactive writing to support literacy learning at these early grades (Button et al. 1996; Craig 2006). Not only is writing development with preschool children motivating and effective in engaging ELL students to read and write, but research also indicates it is also effective for native speakers (Williams & Pilonieta,

2012). Another added benefit is that ELL students feel more of a community of learners by making a literary contribution during the lesson. When extending the learning event, ELL students can be paired with native speakers as peer support to allow students time to apply the newly acquired vocabulary and literacy concepts taught in the interactive lesson. Storybooks can be used to engage students in contextually meaningful experience (Williams & Pilonieta, 2012). The interactive writing lesson framework allows the teacher to scaffold individual student learning with literacy. In this framework, the teacher uses a storybook read aloud to conduct a shared reading activity, then collaboratively constructs written text with students on chart paper while modeling reading strategies and explicitly teaching concepts of print (Williams & Pilonieta, 2012). The difference between shared writing and the interactive writing approach is that students are highly engaged in the writing, applying phonemic awareness and letter recognition skills as they construct words. The interactive lesson culminates with students reading the text to build comprehension and fluency skills. This interactive writing lesson design has the essential elements of structure, explicit instruction, and teacher scaffolding needed for young English language learners (Williams & Pilonieta, 2012). The ELL population will be studied in this research to see if the interactive writing lesson supports ELL students with phonemic awareness and letter recognition acquisition. Children's learning progresses along a continuum so individualization of instruction is necessary for meeting student literacy needs (Boat, Dinnebeil, & Bae, 2010).

Scaffolded writing instruction with students with disabilities. Individualizing instruction begins with understanding the child's specific needs, interests, abilities, skills and standards for learning and then building on this knowledge to create instructional

learning opportunities (Boat et al., 2010). Progress monitoring of student growth is the next step in scaffolding learning to the student's level of learning. Scaffolding tools for Students with disabilities can include strategies that require the student to respond in writing, in addition to increased or decreased support with skills. Peers can also mediate student learning when a MKO is paired with a novice learner. Students with an individual education plan (IEP) require scaffolded instructional practices to support their learning, just as children of diversity (Boat et al., 2010).

Teacher and expert perspectives of scaffolded writing strategies. In recent research considering the perspectives of experts in the field of writing research, Zumbrunn and Krause (2012) interviewed leading authorities in the writing field to discover their views on the principles that underlie effective writing instruction. Using the criterion for what effective instruction looks like and how effective instruction reaches all ability levels, qualitative data collected were compiled to produce five principles of writing instruction:

1. Effective writing instructors realize the impact of their own writing beliefs, experiences, and practices
2. Effective writing instruction encourages student motivation and engagement
3. Effective writing instruction begins with clear and deliberate planning, that is also flexible
4. Effective writing instruction and practice happen every day
5. Effective writing instruction is a scaffolded collaboration between teachers and student (Zumbrunn & Krause, 2012)

This research emphasized the importance of the teacher's role and increasing student success with writing instruction.

Some researchers have suggested that qualitative methodology can better examine which writing methods are best to use with younger children. Standardized assessments have been criticized as being developmentally inappropriate for measuring the true abilities of young learners, and biased toward "different ethnic and minority groups" (Brodova & Leong, 2001, p. 7). Additionally, qualitative methods capture the smaller increments of development with letter-sound correspondence as evidenced through observations of daily writing opportunities. Experimental research can better show whether scaffolded writing instruction causes an increase in pre-reading skills. A quantitative approach lends itself to show a comparison of methods with young learners in a classroom setting involving a large population of students so the study can be generalized to similar populations. As Bodrova and Leong (1998, p. 15) stated, scaffolded writing needs to be "investigated empirically with controlled studies" to determine its effectiveness in comparison to other writing instructional methods and techniques. The two mixed-method studies in this literature review (Bodrova et al., 2003; Dunsmuri & Blachford, 2004) combine standardized assessments with authentic classroom assessments, while still maintaining developmentally appropriate practices. A combination of methods is needed to produce empirical evidence that is also enriched with qualitative information of early literacy instructional decisions and student writing patterns.

Writing Instruction Guidelines

The research by Gerde, Bingham, and Wasik (2012) highlighted 12 research-based guidelines for writing instruction with young children. The study involved 65 preschool programs representing a wide range from early childcare centers to public pre-k programs. Of the twelve guidelines, the Tools of the Mind curriculum had all but three components, highlighting the need for the interactive writing opportunities to allow students to construct text. When an effective curriculum includes the interactive writing component in the daily routine, students receive additional literacy elements such as phonological/phonemic awareness, letter recognition, print awareness and modeling of writing. In evaluating the literature, the interactive writing strategy was proven to be effective across several studies (Button et al., 1996; Craig, 2006; Jones et al., 2010; Williams & Lundstrom, 2007). Focusing on interactive writing adds features of print concept instruction and meaningful writing opportunities to construct text.

Purpose of the Current Research

The purpose of this study was to investigate a reading and writing instructional intervention with young children entering school that promotes reading skill attainment through active writing opportunities in response to sociocultural text. Additionally, this research will add to the body of current research concerning scaffolded writing instruction to teach young children emergent literacy skills of letter identification, phonological awareness, print concepts, and sound-symbol recognition. Best practices for writing instruction with young children suggest programs that include skill instruction through interactive writing opportunities, supported with scaffolding in the ZPD by adult and peers. The Tools of the Mind scaffolded writing method includes reading skill

instruction with scaffolded writing opportunities guided by MKO support, but lacks the opportunity for students to socially and interactively construct meaningful text while gaining print concept knowledge. The purpose of this research was to consider the effects of adding interactive writing while using self-relevant texts to a scaffolded writing program. The primary goal of this research was to answer the following questions:

1. Does inclusion of interactive reading and writing instruction in scaffolded writing improve pre-kindergarten student's writing skills as assessed by a standardized writing assessment?
2. Does inclusion of interactive reading and writing instruction in scaffolded writing improve pre-kindergarten student's reading outcomes as assessed by standardized and informal assessments?
3. If the addition of interactive reading and writing instruction increases outcomes for pre-kindergarten students, is the instruction effective for some types of learners such as English language learners or students receiving special education services?
4. Do qualitative measures of pre-kindergarten students in both the experimental and control groups support findings of quantitative measures?

In this study, several measures were used to understand the impact of the intervention on reading and writing achievement of pre-kindergarten students. The first three questions were quantitative and were assessed using one standardized writing measure, one standardized reading measure, and one informal reading measure to examine potential statistical differences between the experimental and control groups. The fourth question used qualitative measures of interviews and writing samples to

measure attitudinal changes of pre-k students toward literacy. All data was analyzed in SPSS. At the beginning of the study, data was collected and analyzed using one standardized reading screener to determine if there were pretest differences between the experimental and control condition. A homogenous slopes test was conducted on each data set to determine if pretest scores could be used as covariates in each model. ANCOVA was conducted with the standardized writing measure to help answer the research question, does the inclusion of interactive reading and writing instruction with scaffolded writing improve pre-kindergarten children's writing skills as assessed by a standardized writing measure. MANCOVA was conducted on both standardized and informal reading measures to help answer the research question, does the inclusion of interactive reading and writing instruction with scaffolded writing improve pre-kindergarten children's writing skills. The student survey was analyzed with both ANCOVA and student's paired *t*-tests. Teacher and student interviews were analyzed qualitatively using grounded theory, while student writing samples were assessed using a developmental writing rubric. Both qualitative and quantitative data was collected and merged to gain greater insight with student reading and writing achievement than could be obtained using only one method of study.

CHAPTER III

Methodology

This chapter explains methods used in completing the research, giving special emphasis to the analysis of the data. Chapter components provided are the methodology of the study, participants of the intervention, research design, measures, procedures, and data analysis. The research focused on the effects of interactive reading and writing intervention on the reading and writing outcomes of pre-kindergarten students, comparing the regular classroom scaffolded writing instruction to the interactive reading and writing intervention plus regular classroom scaffolded writing instruction.

General Research Perspective and Type

This study was conducted to determine the effectiveness of reading and writing intervention when it is implemented by pre-kindergarten teachers working in the classroom setting for improving reading skills through scaffolded writing opportunities. The primary question considered in this study was whether the additional interactive literacy lesson would accelerate the early literacy skills of children in their classrooms above and beyond that which occurs with teachers' normal "business as usual" curricular activities. Designing this research required conceptualizing a combined reading and writing interactive lesson using scaffolded writing in the pre-k classroom setting daily. An important consideration was ensuring teachers in all nine classrooms implemented the same lesson structure with fidelity and allowing for student participation of interactive writing. The interactive writing component is considered an important element of high-quality early literacy instruction (McCarrier et al., 2000).

Participants

Setting. The participants were pre-kindergarten students enrolled in the nine classrooms of the urban public schools in the Lebanon Special School District in Tennessee. Two pre-k classrooms were located in each of the four elementary schools. The ninth pre-k classroom was located on the Cumberland University campus, which serves as a collaboration with the Lebanon Special School District. The pre-k – 5th grade elementary schools were chosen because of their convenience for the research study and the high population of pre-k students. This district has a population with demographics of 60% low socioeconomic status, 17% students with disabilities and 10% English language learners.

Teachers. Participants in the study were nine pre-kindergarten teachers employed by the Lebanon Special School District in Tennessee. The pre-kindergarten teachers implemented the intervention and administered the majority of the quantitative measures. Teacher demographics included the following educational degrees: a) six teachers with a Bachelor's degree, b) two teachers with a Master's degree, and c) one teacher with an Educational Specialist degree. Each pre-k teachers' years experience in teaching with the Tools of the Mind curriculum varied from one to five years with an mean of 3.33%. All pre-kindergarten teachers are females ranging in age from 28 to 56. Six of the teachers received formal six-day training of the Tools of the Mind curriculum, two received classroom experience and informal training on the curriculum while working in a pre-k classroom for three years, and one received no formal training but did receive weekly coaching for a year consisting of classroom observations and conferencing. All teachers received one full day of training before the intervention began

and on-going professional training sessions throughout the study. A more detailed description of teaching training is provided on page 49.

Students. The study involved participants in nine classrooms of 20 students each. A total of 174 pre-k students completed the study out of 180 enrolled at the beginning of the study in August 2014. All six students did not complete the entire study due to family relocation outside the district zoning. Enrollment in these pre-k programs is based on income eligibility (low socio-economic status), special education characteristics (speech or language delay), identification as a non-native speaker (English language learner), or other at-risk factors. The participants at the beginning of the study were four-year-old students, born between August 16, 2009 and August 15, 2010. Four of the 180 students, identified as SWD and repeating pre-k, had birthdates before August 16th deadline (5 year-olds). In total, 49.2% of participants were boys ($n = 91$) and 44.9% were girls ($n = 83$). Eighty-nine percent of the participants qualified for free or reduced-price lunch (low socio-economic status). The ethnic composition of the pre-k participants district-wide was 51% Caucasian, 24% Black, and 25% Other (Asian/Pacific Islander, American Indian, Hispanic/Latino, and non-Hispanic Latino). Forty-three students were non-native English speakers (ELL) and 131 students were native English speakers. Twenty-four participants (13.8%) were eligible for special education services during this study. Assignment to conditions was conducted using a stratified random assignment procedure. Students were assigned to intervention and control within each classroom. The ELL student sample and students with disabilities sample were also stratified when assigning students to control and intervention groups. Individual random assignment was

not appropriate for this study because of district policy pertaining to zoning restraints and school assignment according to student address.

Research Design

Using a quasi-experimental pre-post, control group design, students ($n = 180$) in pre-kindergarten were randomly assigned at the classroom level to one of two conditions: interactive reading and writing intervention plus regular classroom scaffolded writing instruction, and a business as usual (BAU) control condition which received regular classroom scaffolded writing instruction. The pretest-posttest control-group design effectively controls for eight threats to validity (i.e., history, maturation, testing, instrumentation, regression, selection, mortality, and interaction of selection and maturation) as described by Campbell and Stanley in Gall, Gall, and Borg (2007). External validity was established as data can be generalized to other pre-kindergarten students of the same logistical makeup. The pre-posttest design allowed for the researcher to check for pretest differences that were an issue when randomizing the participants within each class. This design also allowed for differences in the posttests to be attributable to the intervention rather than preexisting ability levels or attributes of the students.

Although the quantitative portion was the dominant design in this study, qualitative data were also collected. The less dominant design involved descriptive data on teacher instruction and perceptions that were collected through classroom surveys, and student interviews both at the beginning and end of the study.

Business as Usual Control Condition

The school district has a common curriculum and common assessment protocols in place across all pre-k programs. Students in the business as usual control condition received The Tools of the Mind curriculum that was approved by the Tennessee State Department of Education. The educational assistant assigned to the classroom facilitated student literacy activities with participants in the control group. Students participated in daily center time when they were allowed to play in various themed stations pertaining to literacy. Each station had writing materials and books available for students to incorporate reading and writing into their play situation. The educational assistant kept a daily observation checklist to guide the fidelity of the control group.

Intervention

Scaffolded writing curriculum. All students received daily writing instruction using the traditional pre-kindergarten Tools of the Mind curriculum (Bodrova & Leong, 2009-2011) utilizing a daily scaffolded writing technique. The teacher used the Scaffolded Writing Dynamic Assessment tool to document daily student writing progress of all students. A leveled rubric developed by Bodrova and Leong (2009-2011) designated eight levels of the child's independent level ranging from (P) drawing a picture to (WP) writing sentences and using word patterns. This measure was chosen to show the progression of growth in reading and writing stages on a daily basis and individualized scale.

Interactive reading and writing instruction. The intervention involved systematic delivery of well-planned and deliberately sequenced book reading experiences

and writing opportunities over a week span, focusing on a new literacy skill each day while reviewing previously taught skills. Explicit instruction was taught through scripted lessons. The interactive reading and writing research was a 13-week intervention for experimental groups, four lessons a week for a total of 52 lessons. Each lesson lasted 20-25 minutes, with most of the read aloud portion lasting approximately 10 minutes and the remainder of the time spent on interactive writing. The pre-k teacher kept a daily attendance log to note students that were absent on any given day, which allowed for tracking achievement and attendance information; however, no additional lessons were provided to absentee students. Teachers audiotaped each lesson for fidelity purposes and emailed the recorded lessons each week to the researcher. Lessons were conducted in groups of ten while all students sat on a carpet area, as endorsed by Button et al. (1996). Students in the experimental groups participated in the Tools of the Mind curriculum plus an interactive reading and writing lesson. The interactive reading and writing technique was adapted from the Share the Pen technique (Pinnell & Fountas, 2001). Teachers were provided with scripted content lessons and a specific storybook for teaching each of the intervention lessons. Teacher binders were provided with a timeline, directions for intervention lesson, fidelity checklists, scope and sequence, research materials, scripted daily lessons, copies of all measures, and student lists of the intervention group and the control group participants.

Sociocultural literature can be a motivating factor for students to attend during read aloud sessions, and the interactive writing (Share the Pen) can also motivate students to learn letters, sounds, and concepts of print (McCarrier et al., 2000). Scaffolding each child's literacy experience in each lesson is also crucial for developing reading growth.

To teach phonemic awareness, letter recognition, print awareness, and word recognition to pre-kindergarten students while gaining student interest through sociocultural self-relevance, the interactive reading and writing group intervention consisted of: (a) text read aloud experience of sociocultural literature, (b) interactive writing experience of planning and constructing texts, and (c) letter-sound instruction involving word building and phoneme segmentation, demonstrations of print concepts, and discussions of cultural awareness (Craig, 2006; Pinnell & Fountas, 2011; Williams & Pilanta, 2012).

Daily lessons included sociocultural children's books specifically chosen for the text read aloud experience. Overall design of lessons included a storybook picture walk and introduction to vocabulary on the first day, full reading of the book on the second and third day, and student retell of the story on the fourth day. The teacher explicitly taught and modeled print concepts while reading the text. After the read aloud, the teacher and students discussed the target literacy concept of the day and application to the text. Together, teachers and students negotiated to construct words or sentences to be written in response to the text. The final part of the lesson was the interactive writing experience of students writing the words or sentences on chart paper as the teacher scaffolded student's discovery of phonemes and formation of letters. Each student physically held the marker to write as many letters of the selected letters and/or words as possible. The teacher played the role of MKO as she facilitated student writing and sometimes scripted other parts of writing. During the writing of the text, the teacher and students discussed letter-sound correspondence, print concepts, word identification, sight words, and phonological awareness. Every child was given the opportunity to write at least one letter during each lesson. While one student goes to the chart paper to write,

other students were encouraged to write the same letter on the carpet with their finger or sky-write the letter in the air. As noted by McCarrier et al., (2000), students participating in interactive writing creates high instructional value every time the child attempts to write a letter or word on the chart paper. The process of students attempting to write and actually penning letters themselves is the most important feature of interactive writing, not just the final product of writing itself. To conclude the lesson, the teacher and students read aloud all written words and sentences. The teacher then posted the writing on the classroom wall to be revisited and reread by students during the day routine.

Sociocultural books were chosen for their specific subject matter pertaining to different populations of ethnic, cultural, and academic diversity (Justice et al., 2009; Lin, 2005; Pinnell & Fountas, 2011). Sociocultural literature explores the interaction of people and the social and cultural environment in which they live (Cherry, 2010). Lessons using the sociocultural theme were divided among 13 weeks of instruction to provide an element of self-relevancy to pre-k students in the diverse classrooms. Thirteen different literature selections were used during the duration of the study. Each storybook selection was the focus for one week (four lessons) to help students gain basic understanding, vocabulary, and knowledge with repeated readings (Dickinson & Smith, 1994). The rationale for using the interactive reading and writing approach was that it allowed students to apply developing knowledge of phonemic awareness skills in context. Students are motivated to write by reading sociocultural literature and then responding with writing sentences that they created on their own. Examples of the scope and sequence, listing of sociocultural literature, and a lesson template chosen for the study are

provided in Appendices B, C, and D respectively. These steps were taken to achieve implementation fidelity and replication for future studies.

Teacher Training

Intervention training was conducted for teachers during one day of professional development in August before school began, with an additional follow-up training each month for 1 hour. The summer one-day training focused on the components of the intervention and the correct implementation of intervention lessons. Training topics included interactive reading and writing lesson implementation, assessment measure implementation and scoring, fidelity measures, and overall goals of the study. During this session teachers received training on how to administer and score the quantitative and qualitative measures. Pre-k teachers have routinely administered the Brigance and Children's Progress assessments as part of the district program assessment protocol in previous years, so implementation and scoring was reviewed for these measures. Teachers received training on the new quantitative assessments: TEWL-3, Clay's Observation Survey, and student surveys. An Interactive Reading & Writing manual was provided for teachers with specific directions for how to conduct the interactive reading and writing session with students. Additional background information on the interactive writing was also provided and discussed. Writing supplies were distributed at the training (e.g., chart paper, pointers, markers). The researcher also had follow up monthly sessions with teachers to review and discuss measures and intervention implementation. After each of the three classroom observations, the researcher met individually with teachers to give feedback using the fidelity checklist.

Fidelity of Implementation

Teachers and educational assistants used a lesson fidelity checklist to guide and self-monitor both treatment and control group instruction. Several methods were used to monitor fidelity of implementation. Three unannounced observations of intervention lessons were conducted by the researcher in each classroom using an intervention fidelity checklist (see Appendix E). This fidelity checklist was created for the interactive writing lessons to assess adherence to quality and content of procedures according to a listing of essential elements (McCarrier et al., 2000). Teacher fidelity for observed lessons was 97.4% for the total number (27) of classroom observations. Implementation scores ranged from 70% to 100% for individual lessons per teacher. One problematic area of implementation at the beginning of the study was failure to allow each child to actually hold the pen to write letters. The researcher conferenced individually with teachers after intervention lessons using the fidelity checklist to address any problematic areas. Next, every intervention lesson was audiotaped for all four sessions per week, for a total of 13 weeks. The researcher listened to 25% of all intervention lessons total for the study. Lessons were randomly selected. The fidelity of audiotaped lessons was 95.8%, ranging from 90.0% to 99.23%, for a total number of tape recordings reviewed ($n = 117$). Additionally, during the qualitative assessment period, teacher and student interviews were audiotaped. Results of the interview data were reviewed by a second person.

Educational assistants were also observed using the control fidelity checklist (see Appendix F). Unannounced visits occurred monthly.

Data Collection

Brigance Early Childhood Screener III. The Brigance Early Childhood Screener III is a nationally standardized assessment for use with children three through five years of age (Curriculum Associates, LLC. 2013). Initial comprehensive ability of the students was determined by obtaining students' Brigance Early Childhood Screener III score, which is designed for four-year-old participants. Assessment items in the age-specific screens are norm-referenced as well as criterion-referenced covering physical development, language development, and academic skills/cognitive development areas of literacy and math (Curriculum Associates, LLC. 2013). Selected assessments from the criterion-referenced Brigance ECS III were standardized and validated in 2012 on a nationally representative geographic, demographic, and socioeconomic sample. Items from these standardized and validated assessments were selected to create the age-specific screen in the Screen III. Validation studies have shown the assessments in the Brigance ECS III have substantial content and construct validity, excellent concurrent validity, and a high degree of discriminant validity (Curriculum Associates, LLC. 2013). Overall reliability scores for the core assessments were high internal consistency (.94), high test/retest reliability (.92), and high inter-examiner reliability (.93).

Children's Progress Academic Assessment (CPAA). Pre-kindergarten students' reading skills were assessed two times during the year (August and December) using CPAA to serve as a pre- and posttest measure. CPAA is a standardized, norm-referenced measure with a version specifically designed for young students. (Northwest Evaluation Association, 2012). CPAA measures student performance in four areas of early reading (listening, phonemic awareness, reading, and phonics) across a scale of four

score categories: (a) below expectation, (b) approaching expectation, (c) at expectation, and (d) exceeding expectation. To examine the reliability of the CPAA, a Cronbach's alpha was computed for the assessment in each grade and across the three administration periods (fall, winter, spring). Reliability alphas of 0.9 were found overall for pre-kindergarten. Concurrent validity for the CPAA has been established with other well-established letter naming, nonsense word, and phonemic segmentation components of *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS). The results of the CPAA were compared to the raw score and risk categorization metrics provided by the DIBELS measures. Overall, there were significant correlations observed between DIBELS and the literacy components of the CPAA, providing evidence of the CPAA's external validity. The overall results of DIBELS (collapsing letter naming fluency, phonemic segmentation fluency, and nonsense word fluency into a single variable) were examined against the overall results for the literacy section of the CPAA (Northwest Evaluation Association, 2012). A correlation of 0.55 was found, demonstrating that there is a significant positive relationship between the two measures. The literacy concepts of the CPAA were also compared with TN reading scores Terra Nova Achievement Test (TN) to show an acceptable degree of correlation in the areas of literacy 0.55, phonemic awareness 0.43, writing mechanics 0.39, and reading 0.42 (Northwest Evaluation Association, 2012).

Test of Early Written Language, 3rd ed. (TEWL-3). The TEWL-3 is a standardized test administered to students individually to measure writing ability of children from 4.0 to 11.11 years of age (Hrescko, Herron, Peak, & Hicks, 2012). The TEWL-3 was also administered to pre-k students as a pre- and post-test in August and December. The TEWL is divided into two subtests: 1] basic writing (directionality,

awareness of letter features, metalinguistic knowledge, spelling, punctuation and capitalization, proofreading, grammatical knowledge usage, and explicit grammar and 2] contextual writing. Combining the index scores of both subtests forms an overall writing composite. Only the basic writing subtest is appropriate for students age 4.0 to 11.11 and was administered to all pre-k students since an enrollment age of 4.0 is required to be in the pre-k program. The contextual writing subtest was not administered because it is not age-appropriate for this population. The TEWL-3 has high internal consistency reliability scores reported age and grade norms for basic writing (.95, .96), contextual writing (.91, .91), and overall writing (.96, .96) (Hrescko et al., 2012). Overall, the TEWL-3 has high reliability in five areas of basic writing for both age and grade (.95/.96, .95/.95, .95/.93, .95/.90, .99/.98). Overall, validity scores of the TEWL-3 compared to the WIAT-II were considered large for both corrected and uncorrected scores: reading (.60/.74), written expression (.61/.70), and total achievement (.60/.74) (Hrescko, et al., 2012).

Clay's Observation Survey of Early Literacy Achievement (COS).

Students were also assessed using the COS as a pre- and post measure for literacy knowledge and writing behaviors (Clay, 2002). The COS measures student knowledge of letter names, letter sounds, plus print knowledge. The predictive validity of the COS of established benchmarks for word identification, text reading, and writing vocabulary are valid for early screening purposes and evaluating student outcomes (Denton, Ciancio, & Fletcher, 2006). In addition to this evidence for predictive validity, there is evidence for concurrent validity of the COS compared to the New Zealand study with regards to concepts about print with word reading (.79), letter identification with word reading (.85), and writing vocabulary with word reading (.82) (Clay, 2002). Students who are eligible

for special education and English Language Learners were included in the study in order to collect data on the effectiveness of the writing intervention for each of these subgroup populations.

Teacher interview. A teacher interview protocol was developed based on research-based recommendations of best practices in writing instruction (Zumbrunn & Krause, 2012). The interview consisted of seven questions designed to elicit beliefs and practices as pertaining to student writing opportunities in the pre-kindergarten classroom. The interview was administered by the researcher in August at the beginning of the study. Each interview was conducted one-on-one in a private setting and audio-taped for fidelity. Teacher interview questions can be found in Appendix H.

Student interview. A student interview protocol was developed based on an adaptation of an assessment for reading instruction (McKenna & Stahl, 2009). The student interview contained five questions for assessing affective factors toward reading and writing motivation at school and home. One student from each subgroup of ELL, and SWD, and non-ELL/SWD student were chosen from each classroom and from both the intervention and control group. Both a pre- and post-measure were conducted by the researcher to denote changes in literacy attitude or behavior for students. For this current study, these questions were examined to make a statement connecting quantitative scores with the qualitative results. Student interview questions can be found in Appendix I.

Student survey. The student survey was adapted from an *Elementary Reading Attitude Survey* (McKenna & Stahl, 2009) to assess student attitudes toward reading and writing at home and at school. A special survey was adapted for this research and was administered to students at the beginning and end of the study. The survey was

age-appropriate and designed to understand how students feel about reading and writing self-efficacy and motivation. The survey consisted of 10 questions. Students answered each question by coloring in the particular Garfield character that reflected the student's feelings toward the literacy question. The four characters show Garfield being happy, satisfied, sad, or angry. The survey was given at the beginning and the end of the study by each classroom teacher to assess any perceived changes in student attitudes toward reading and writing over the five-month intervention. The student survey can be found in Appendix J.

Student writing samples. All students participated daily in scaffolded writing activities using a specific writing template (play plan) before going to play in a center. The Scaffolded Writing developmental/learning trajectories rubric (Badrova et al., 2009-2011) was used to assess student's writing progression and to indicate the current writing level of the student. These descriptive levels range from formulating a plan (PL) to alphabetic principle (AP). The rubric can be viewed in Appendix K.

Timeline

An IRB was obtained from Middle Tennessee State University in July 2014 before beginning the study (See appendix L for IRB). At the beginning of the school year August 2014, the researcher gained parental consent for each pre-k student to participate in the study ($n = 180$) by personally contacting families as they attended their assigned phase-in day during the first week of school. The parental consent form can be found in Appendix G.

The Brigance ECS III was administered at the beginning of the study to test the equivalency of control and intervention groups. The CPAA and Clay Observation

Survey were administered as a pre-post test at the beginning of the year by the classroom teacher in August, and again in December along with the student survey. The TEWL was also administered in August and December by the researcher and MTSU graduate students as a pre-post test measure. Additionally, the researcher administered the teacher interviews and student interviews as a pre- and post-test qualitative measure.

Data Analysis

There were four research questions investigated during the study. Three of the four questions were quantitative and proposed to determine the effectiveness of the interactive reading and writing intervention on supporting growth in reading and writing outcomes for pre-k students. The fourth question was qualitative and proposed to add support to the findings of the quantitative analysis. The scores on the pre-assessments and post-assessments were statistically analyzed in order to determine the effectiveness of the interactive reading and writing intervention and its effectiveness compared to the scaffolded writing instruction control. The research questions and hypothesis were analyzed in the following manner:

1. Does the inclusion of interactive reading and writing instruction in scaffolded writing improve pre-kindergarten students' writing skills as assessed by a standardized writing assessment?

Hypothesis: There will be a significant group effect between the interactive reading and writing experimental group and scaffolded writing control group in favor of the interactive group on basic writing skills of pre-kindergarten students. To examine any potential statistical difference between the two groups on the baseline writing measures, ANCOVA will be conducted in SPSS

using the condition (intervention vs. comparison) as the independent variable, the writing measure as the dependent variable, and the writing assessment pre-test score as a covariate.

2. Does inclusion of interactive reading and writing instruction in scaffolded writing improve pre-kindergarten student's reading outcomes as assessed by standardized and informal assessments?

Hypothesis a: There will be a significant group effect between the interactive reading and writing experimental group and control group in favor of the interactive group on phonemic awareness, word reading, listening, and phonics of pre-k students as measured by a standardized assessment. To examine potential statistical difference between the two groups on the standardized reading measure, a MANCOVA test was conducted with reading, listening, phonics, and phonemic awareness as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate.

Hypothesis b: There will be a significant group effect between the interactive reading and writing experimental group and control group in favor of the interactive group on letter recognition, sound knowledge, and print knowledge skills of pre-k students as measured by an observation survey. To examine potential statistical difference between the two groups on the COS informal reading measure, a MANCOVA test was conducted with letter recognition, sound knowledge, and print knowledge as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest

scores as a covariate.

3. If the addition of interactive reading and writing instruction increases outcomes for pre-kindergarten students, is the instruction effective for some types of learners such as English Language learners or students receiving special education services?

Hypothesis: There will be a significant difference between the interactive reading and writing experimental group and the control group in favor of the interactive group for some types of learners in reading and writing growth. To examine potential statistical difference between the two groups of ELL students and baseline outcomes, ANCOVA was conducted with the writing measure and ELL students, then MANCOVA was conducted separately with the two reading measures and ELL students. Next, to examine potential statistical difference between the two groups of SWD and baseline outcomes, ANCOVA was conducted with the writing measure and SWD, then MANCOVA was conducted separately with the two reading measures and SWD.

4. Do qualitative measures of pre-kindergarten students receiving the interactive reading and writing instruction support findings of quantitative measures?

Hypothesis: There will be patterns and trends revealed in interviews, and student surveys to support the student quantitative scores on reading and writing. To qualitatively examine any potential difference between the two groups on student reading and writing attitudes, teacher interviews, student interviews, and student writing samples were analyzed.

CHAPTER IV

Results

This mixed-methods study utilized an experimental design and examined the impact of scaffolded interactive writing above and beyond scaffolded writing instruction on emergent learner acquisition of early reading and writing skills. Three quantitative questions and one qualitative question were addressed. The quantitative questions were as follows: (a) Does inclusion of interactive reading and writing instruction in scaffolding writing improve pre-kindergarten student's writing skills as assessed by a standardized writing assessment? (b) Does inclusion of interactive reading and writing instruction in scaffolded writing improve pre-kindergarten student's reading outcomes as assessed by standardized and informal assessments? (c) If the addition of interactive reading and writing instruction increases outcomes for pre-kindergarten students, is the instruction more effective for some types of learners such as English language learners or students receiving special education services? An additional fourth qualitative research question was researched to evaluate student attitudes and values regarding reading and writing attitudes and perceptions. The qualitative question was: Do qualitative measures of pre-kindergarten students receiving the interactive reading and writing instruction support findings of quantitative measures with regards to literacy attitudes and perspectives? This chapter includes an overview of participant demographic data, the pretest measures, the results of each quantitative research question individually, and the qualitative research question and discussion.

Demographic Data

The intervention research began in August with a total of 180 pre-kindergarten participants. During the course of the research six students withdrew from the study due to relocation out of the district zoning area, which resulted in the students no longer attending the pre-k program. Even though this population tends to be somewhat transient, attrition was not a major factor because groups were studied and data collected over a period of five months. The attrition was not equal across groups. The study maintained a total of 174 participants with 89 students in a control group and 85 students in an experimental group. Of the 174 participants, 43 were English language learners enrolled across the nine classrooms in the district. There were 23 total ELL control participants and 20 total ELL experimental participants. There were a total of 24 Students with disabilities remaining in the research and enrolled across the district. There were 12 total SWD control students and 12 total SWD experimental students.

Quantitative Data Results

Quantitative data collection consisted of one standardized writing measure (TEWL-3); two reading measures (CPAA and COS); English language learner participants and students with disabilities on all measures; and one comprehensive early childhood standardized screener (Brigance). All analyses were conducted based on significance or, alpha of .05. Inter-rater reliability was computed by having 25% of all test protocols rescored by a second trained researcher, with the exception of Children's Progress online assessment. The inter-rater reliability was calculated by percent agreement. The inter-rater reliability for both the TEWL-3 and Clays Observation Survey

was 96%. Disagreements were based on consistency in interpretation of answers and were resolved by discussion of the scoring protocol.

Brigance. The experimental and control groups were assessed at the beginning of the research for pretest differences on the Brigance measure. According to the two-independent sample *t*-test, student scores in the control group ($M = 64.17$, $SD = 21.16$, $n = 90$) were not significantly different from the experimental group ($M = 67.36$, $SD = 21.96$, $n = 90$, $t(178) = -.99$, $p = .32$, $d = 0.15$). The results indicated that the control and experimental groups were similar in overall skill capacity according to Brigance ECS III scores compared in a two-independent-sample *t*-test. Table 2 contains descriptive statistics for each group according to the Brigance ECS III pre-test.

Table 2

Means and Standard Deviations of Pretest Scores by Condition for Brigance

Pretest	Treatment	<i>N</i>	<i>M</i>	<i>SD</i>
Brigance, ECS III	Experimental	90	67.36	21.96
	Control	90	64.17	21.16
	Total	180	65.72	21.62

Note. Total *N* = 180 Pre-intervention study

TEWL-3 standardized writing measure. The TEWL-3 was applied to help answer the research question, does the inclusion of interactive reading and writing instruction with scaffolding improve pre-kindergarten student's writing skills as assessed by a standardized writing assessment? The means and standard deviations for the TEWL-3 raw scores are shown in Table 3.

A test for homogenous slopes confirmed the relationship between TEWL-3 writing pretest raw scores and TEWL-3 posttest raw writing scores did not differ by treatment, $F(1,170) = .91, p = .343$, indicating that the pretest raw scores could be used as a covariate in the ANCOVA test.

A test for homogenous slopes confirmed the relationship between TEWL-3 writing pretest index scores and TEWL-3 posttest index writing scores did not differ by treatment, $F(1,170) = .41, p = .525$, indicating that the pretest raw scores could be used as a covariate in the ANCOVA test. However, raw scores were used in this research instead of index scores because raw scores are a more sensitive measure with young students.

To examine potential statistical difference between the two groups on the TEWL-3 basic writing measure, an ANCOVA test was conducted in SPSS using the condition (intervention vs. comparison) as the independent variable, the TEWL-3 subtest 1- basic writing measure as the dependent variable, and the subtest 1- basic writing measure pretest as a covariate. An ANCOVA test was conducted with both the TEWL-3 raw scores. It was hypothesized that the intervention would show a significant group effect between the interactive reading and writing experimental group and scaffolded writing control group on the TEWL-3 basic writing skills of pre-kindergarten students. Results of a one-way ANCOVA indicated no significant effect on the TEWL-3 basic raw scores after controlling for the TEWL-3 subtest - 1 basic writing pretest score as a covariate. The TEWL-3 mean performance did not differ by treatment with the raw scores, $F(1,171) = 1.65, MSE = 23.76, p = .201$. Therefore, the research hypothesis was not confirmed. Students who received the interactive writing and reading component in addition to

scaffolded writing did not make more progress on writing than students who did not receive interactive writing and reading treatment.

Table 3

Means and Standard Deviations by Condition for TEWL

	Experimental Group (<i>n</i> = 85)		Control Group (<i>n</i> = 89)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Raw Pretest	7.89	5.41	6.46	5.05	0.33
Raw Posttest	17.26	6.95	15.20	5.61	

Note. Total *N* = 174

Figure 1 is a graph of the basic TEWL-3 raw writing growth writing score growth of students in the intervention group versus the control group.

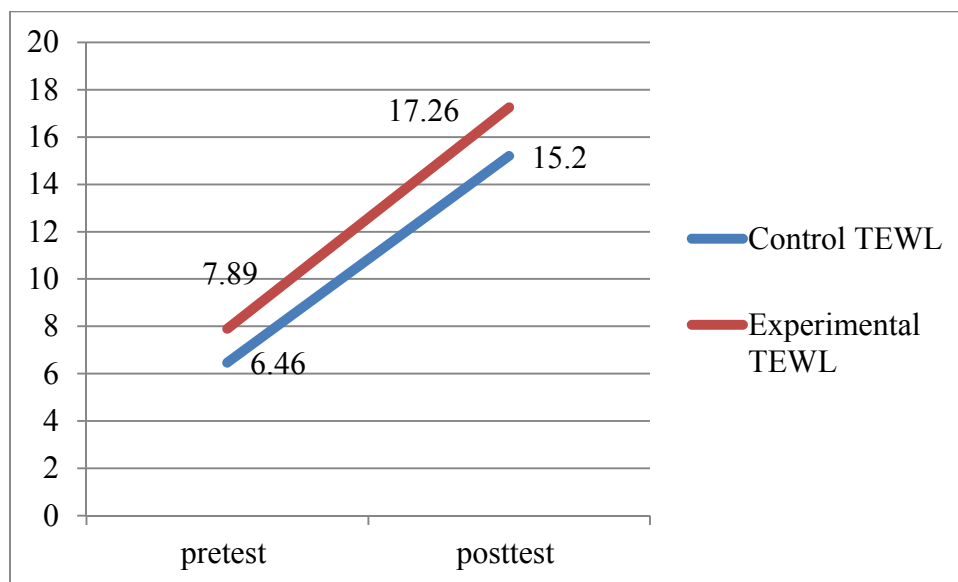


Figure 1. Student Performance on TEWL Raw Scores by Condition

Children's Progress Academic Assessment standardized measure. The CPAA was used to help answer the research question, does the inclusion of interactive reading and writing instruction with scaffolding improve pre-kindergarten student's reading outcomes (i.e., reading, listening, phonics, and phonemic awareness) as assessed by a standardized reading assessment? The means and standard deviations for the CPAA are shown in Table 4.

A homogenous slopes test was conducted by subgroup that confirmed the relationship between CPAA pretest and posttest scores did not differ by treatment with reading, $F(1,170) = .88, p = .348$; with listening, $F(1,170) = .42, p = .520$; with phonics, $F(1,170) = .31, p = .581$; or with phonemic awareness, $F(1,170) = 1.91, p = .169$, indicating that the four CPAA pretest scores could be used as covariates in the Multivariate Analysis of Covariance (MANCOVA) model.

To examine potential statistical difference between the two groups on the standardized reading measure, a MANCOVA test was conducted with reading, listening, phonics, and phonemic awareness as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate. The MANCOVA was conducted four times with the CPAA standardized reading scores using each of the four pretest scores as a covariate, which produced twelve univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect in the reading outcomes of reading, listening, phonics, and phonemic awareness between the interactive reading and writing experimental group and the scaffolded writing control group of pre-kindergarten students. Table 4 includes experimental and

control group CPAA reading, listening, phonics, and phonemic awareness pretest and posttest mean scores and standard deviations.

Table 4

Means and Standard Deviations by Condition for CPAA

Group	Reading		Listening		Phonics		Phonemic Awareness	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experimental								
Pretest	29.55	16.05	29.33	17.56	24.96	18.49	24.61	17.84
Posttest	61.31	14.16	60.46	16.66	58.41	24.26	58.98	15.20
Control								
Pretest	26.47	15.87	23.44	16.30	24.43	20.02	23.96	16.19
Posttest	57.00	15.72	57.98	18.05	52.39	25.56	51.12	18.36
Effect Size (<i>d</i>)		0.29		0.14		0.24		0.47

Figure 2 is a graph of the CPAA reading growth score of students in the intervention group versus the control group.

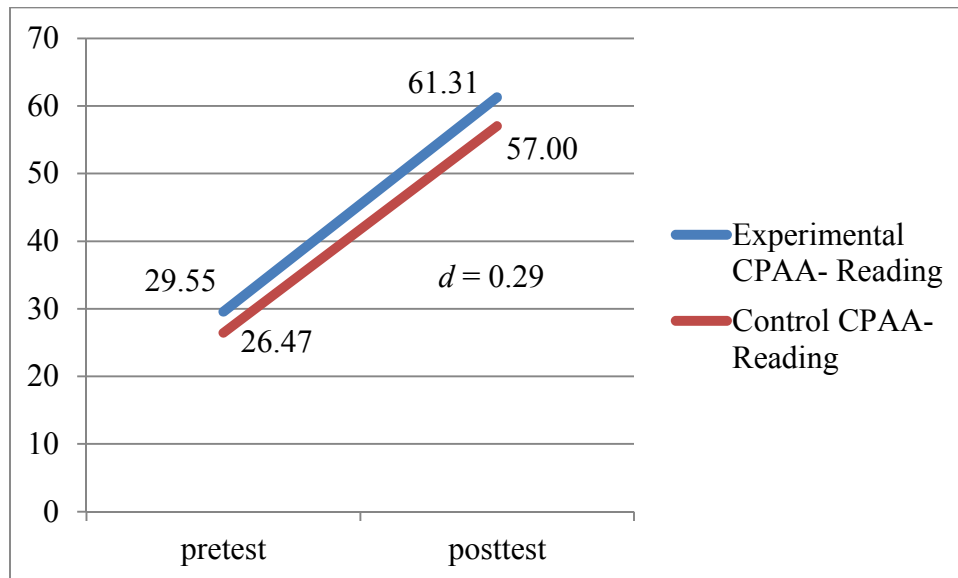


Figure 2. Student Performance on CPAA Reading Scores by Condition

Figure 3 is a graph of the CPAA listening growth score of students in the intervention group versus the control group.

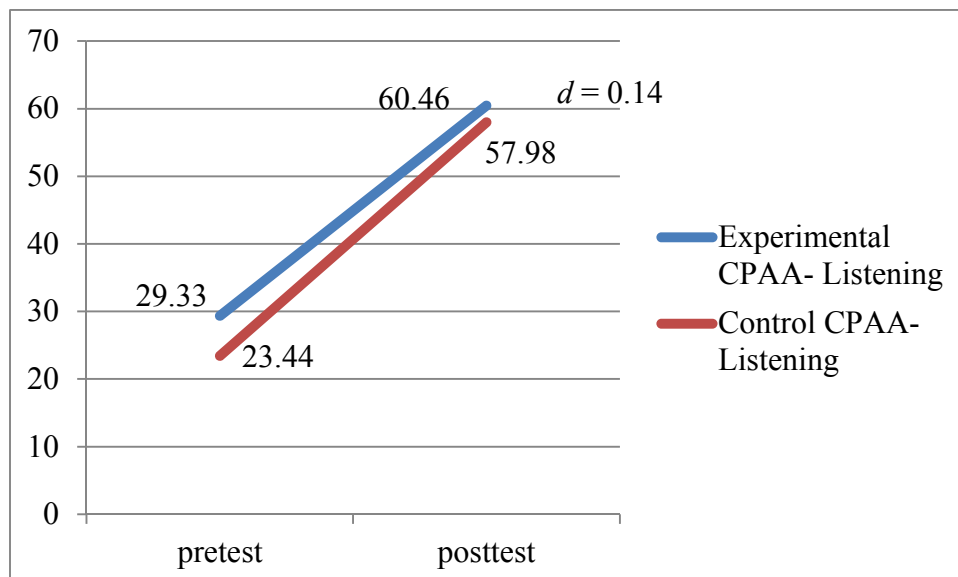


Figure 3. Student Performance on CPAA Listening Scores by Condition

Figure 4 is a graph of the CPAA phonics growth score of students in the intervention group versus the control group.

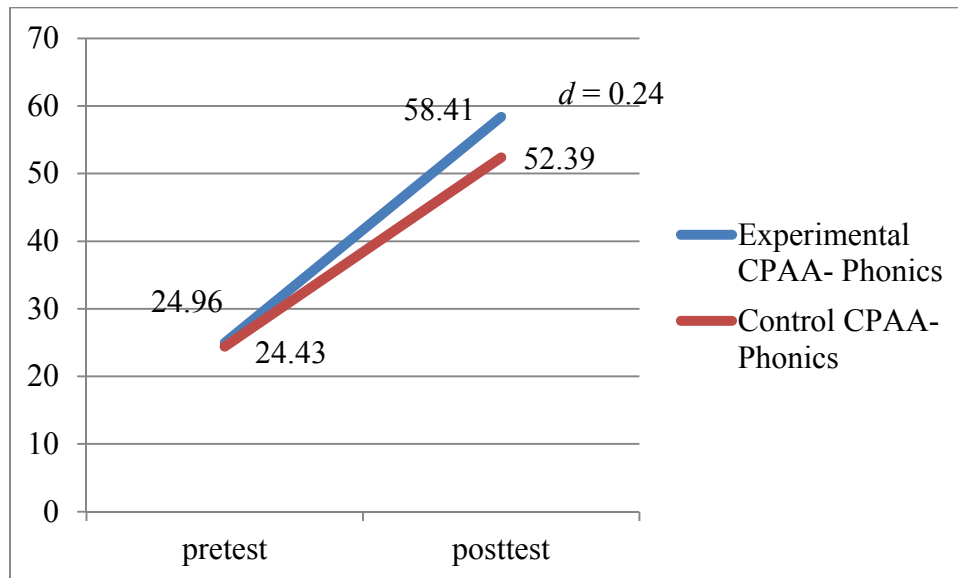


Figure 4. Student Performance on CPAA Phonics Scores by Condition

Figure 5 is a graph of the CPAA phonemic awareness growth score of students in the intervention group versus the control group.

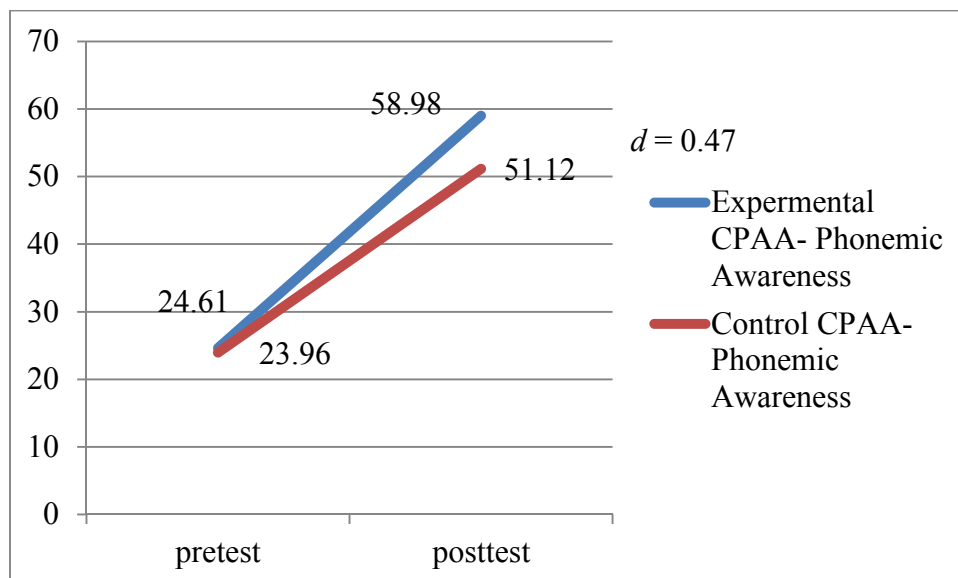


Figure 5. Student Performance on CPAA Phonemic Awareness Scores by Condition

The first MANCOVA test was conducted for group difference on the linear combination of the CPAA posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of reading as a covariate. The MANCOVA test results showed a nonsignificant group effect, $F(4,168) = 2.31, p = .060$, $Wilks' \lambda = 0.95$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for reading pretest as covariate revealed a nonsignificant group effect, $F(1,171) = 2.59, MSE = 210.78, p = .109$. A second ANCOVA test for listening was not significant, $F(1,171) = .28, MSE = 266.59, p = .601$. A third ANCOVA test for phonics was not significant, $F(1,171) = 1.95, MSE = 609.90, p = .164$. A fourth ANCOVA test for phonemic awareness was significant, $F(1,171) = 7.90, MSE = 267.43, p = .006$.

The second MANCOVA test was conducted for group difference on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of listening as a covariate. The MANCOVA test results did not show a significant group effect, $F(4,168) = 2.05, p = .089, Wilks' \lambda = .95$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for listening pretest as covariate revealed a nonsignificant group effect, $F(1,171) = 1.41, MSE = 201.41, p = .237$. A second ANCOVA test for listening was nonsignificant, $F(1,171) = .15, MSE = 285.77, p = .701$. A third ANCOVA test for phonics was not significant, $F(1,171) = 1.62, MSE = 614.29, p = .204$. A fourth ANCOVA test for phonemic awareness was significant, $F(1,171) = 7.13, MSE = 278.80, p = .008$.

The third MANCOVA test was conducted for group difference on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonics as a covariate. The MANCOVA test results did show a significant group effect, $F(4,168) = 2.90, p = .023$, $Wilks' \lambda = .94$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for phonics pretest as covariate revealed a nonsignificant but observable group effect, $F(1,171) = 3.81, MSE = 197.44, p = .053$. A second ANCOVA test for listening was not significant, $F(1,171) = .85, MSE = 287.56, p = .358$. A third ANCOVA test for phonics was nonsignificant, $F(1,171) = 2.85, MSE = 496.82, p = .093$. A fourth ANCOVA test for phonemic awareness was significant, $F(1,171) = 9.57, MSE = 272.63, p = .002$.

The fourth MANCOVA test was conducted for group difference on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonemic awareness as a covariate. The MANCOVA test results did show a significant group effect, $F(4,168) = 2.66, p = .035, Wilks' \lambda = .940$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for phonemic awareness pretest as covariate revealed a nonsignificant group effect, $F(1,171) = 3.565, MSE = 225.75, p = .061$. A second ANCOVA test for listening was nonsignificant, $F(1,171) = .85, MSE = 302.80, p = .357$. A third ANCOVA test for phonics was nonsignificant, $F(1,171) = 2.45, MSE = 613.12, p = .119$. A fourth ANCOVA test for phonemic awareness was significant, $F(1,171) = 9.33, MSE = 280.06, p = .003$.

The results of a four one-way MANCOVA revealed a significant multivariate main effect for phonemic awareness after controlling for pretest scores as a covariate. The research hypothesis was rejected for phonemic awareness. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for phonemic awareness were obtained by conducting subsequent univariate ANCOVAs. The results indicated that students in the experimental group showed more growth in reading skills of phonemic awareness than the control group as measured by the CPAA instrument. The hypothesis was rejected for reading outcomes on the standardized assessment with phonemic awareness, but not for reading, listening, and phonics. The inclusion of interactive reading and writing instruction with scaffolding improves pre-kindergarten student's reading outcomes (phonemic awareness) as revealed by the standardized reading assessment. Students who received the interactive writing and reading component in addition to scaffolded writing made more progress on phonemic awareness skills, but not reading, listening, and phonics skills, than students who did not receive interactive writing and reading treatment.

COS Informal Reading Measure. The COS was applied to help answer the research question, does the inclusion of interactive reading and writing instruction with scaffolding improve pre-kindergarten student's reading outcomes (i.e., letter recognition, sound knowledge, and print knowledge) as assessed by an informal reading assessment? The means and standard deviations for the COS are shown in Table 5.

Table 5

Means and Standard Deviations by Condition for COS

Group	Letter Recognition		Sound Knowledge		Print Knowledge	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experimental						
Pretest	12.23	15.23	0.60	2.05	3.45	2.83
Posttest	28.95	18.38	13.94	14.86	10.17	4.31
Control						
Pretest	8.62	13.66	0.35	1.16	3.27	3.12
Posttest	26.09	18.77	8.71	10.84	8.01	4.27
Effect Size (<i>d</i>)		0.15		0.40		0.50

Figure 6 is a graph of the COS letter recognition growth score of students in the intervention group versus the control group.

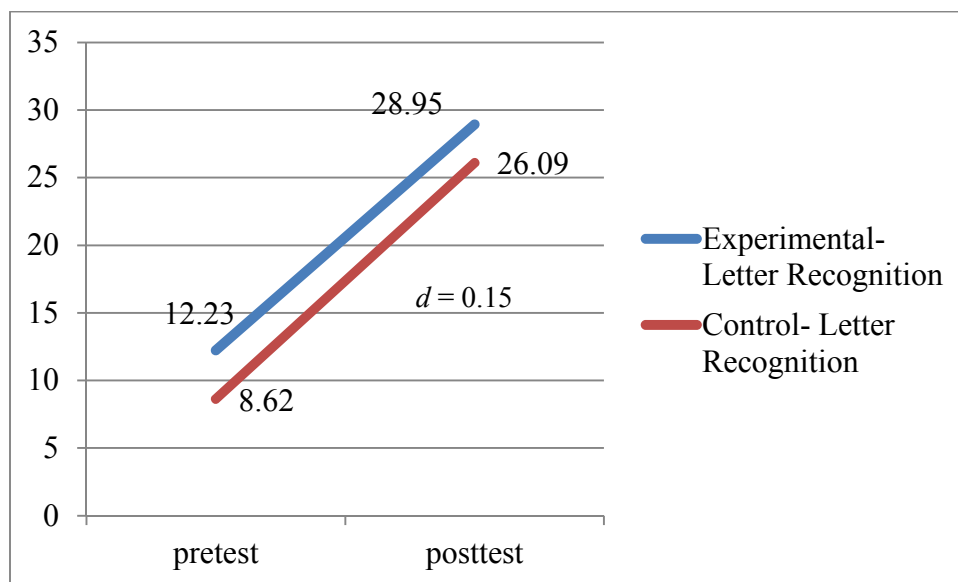


Figure 6. Student Performance on COS Letter Recognition Scores by Condition

Figure 7 displays a graph of the COS sound knowledge growth score of students in the intervention group versus the control group.

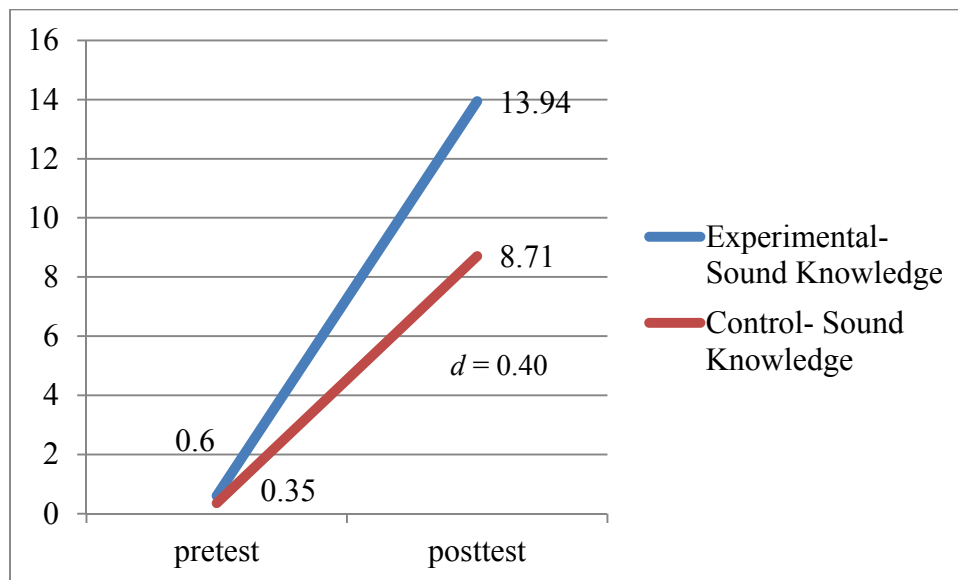


Figure 7. Student Performance on COS Sound Knowledge Scores by Condition

Figure 8 is a graph of the COS print knowledge growth score of students in the intervention group versus the control group.

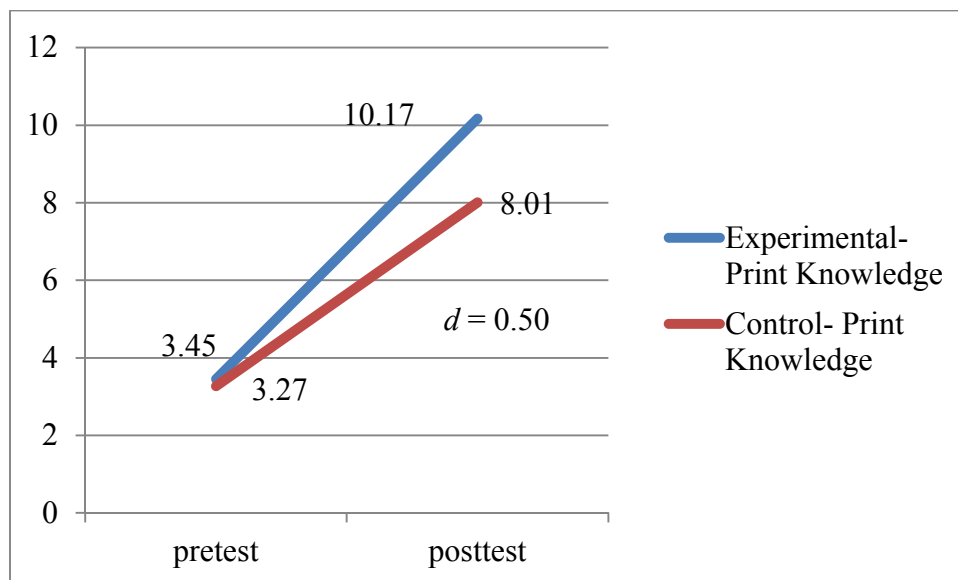


Figure 8. Student Performance on COS Print Knowledge Scores by Condition

A homogenous slopes test was conducted by subgroup which confirmed that the relationship between COS pretest scores and COS posttest scores did not differ by treatment with print knowledge, $F(1,170) = .10, p = .319$; with sound knowledge, $F(1,170) = .01, p = .978$; or with letter recognition, $F(1,170) = .01, p = .947$, indicating that the COS pretest scores could be used as a covariate in the MANCOVA model.

To examine potential statistical difference between the two groups on the COS informal reading measure, a MANCOVA test was conducted with letter recognition, sound knowledge, and print knowledge as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate. The MANCOVA test was conducted three times with the COS informal reading scores using each of the three pretest scores as a covariate and producing nine univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect in the reading outcomes of letter recognition, sound knowledge, and print knowledge between the interactive reading and writing experimental group and scaffolded writing control group of pre-kindergarten students.

The first MANCOVA test was conducted for group difference on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of letter recognition as a covariate. A MANCOVA test results showed a significant group effect, $F(3,169) = 4.91, p = .003$, $Wilks' \lambda = 0.92$. A subsequent univariate ANCOVA test on letter recognition posttest scores after controlling for letter recognition pretest as covariate for the difference between experimental and control groups revealed a nonsignificant group effect, $F(1,171) = .01, MSE = 194.41, p = .920$. A second ANCOVA test for sound knowledge was

significant, $F(1,171) = 4.59$, $MSE = 102.22$, $p = .041$. A third ANCOVA test for print knowledge was significant, $F(1,171) = 8.07$, $MSE = 13.67$, $p = .005$.

The second MANCOVA test on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of sound knowledge as a covariate was conducted for group difference. A MANCOVA test results showed a significant group effect, $F(3,169) = 5.57$, $p = .001$, $Wilks' \lambda = 0.91$. A subsequent univariate ANCOVA test on letter recognition posttest scores after controlling for sound knowledge pretest as covariate for the group difference between experimental and control groups revealed a nonsignificant group effect, $F(1,171) = .62$, $MSE = 326.48$, $p = .431$. A second ANCOVA test for sound knowledge was significant, $F(1,171) = 5.98$, $MSE = 145.84$, $p = .015$. A third ANCOVA test for print knowledge was significant, $F(1,171) = 9.85$, $MSE = 17.23$, $p = .002$.

The third MANCOVA test was conducted on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of print knowledge as a covariate for group difference. The MANCOVA test results showed a significant group effect, $F(3,169) = 6.50$, $p < .001$, $Wilks' \lambda = 0.90$. A subsequent univariate ANCOVA test on letter recognition posttest scores after controlling for print knowledge pretest as covariate for the difference between experimental and control groups revealed a nonsignificant group effect, $F(1,171) = .74$, $MSE = 309.07$, $p = .390$. A second ANCOVA test for sound knowledge was significant, $F(1,171) = 6.86$, $MSE = 143.49$, $p = .010$. A third ANCOVA test for print knowledge was significant, $F(1,171) = 11.80$, $MSE = 14.20$, $p = .001$.

The results of a three one-way MANCOVA revealed a significant multivariate main effect for sound knowledge and print knowledge, but not letter recognition after controlling for pretest scores as covariates. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for letter recognition, sound knowledge, and print knowledge were obtained by conducting subsequent univariate ANCOVA. The results indicated that students in the experimental group showed more growth in sound knowledge and print knowledge than the control group as measured by the COS, but showed no gains in letter recognition. The research hypothesis was confirmed for sound knowledge and print knowledge, but not letter recognition on the informal assessment. Students who received the interactive writing and reading component in addition to scaffolded writing made more progress on sound knowledge and print knowledge skills than students who did not receive interactive writing and reading treatment.

Subgroup scores by measure. The third quantitative question asked, if the addition of interactive reading and writing instruction increases outcomes for pre-kindergarten students, is the instruction effective for some types of learners such as English language learners or students with disabilities? To answer this question, an SPSS homogenous slope test with TEWL-3, CPAA scores, and COS scores was conducted by each condition among each subgroup of ELL participants and SWD participants. The test was done with ELL students and then with SWD participants.

TEWL writing measure with ELL. A test for homogenous slopes confirmed that the relationship between TEWL-3 writing pretest raw scores of ELL students and TEWL-3 posttest raw writing scores of ELL students did not differ by treatment, $F(1,39)$

= .05, $p = .833$, indicating that the TEWL-3 pretest raw scores of ELL students could be used as a covariate in the ANCOVA model. Table 6 includes means and standard deviations of ELL pretest and posttest scores.

Table 6

Means and Standard Deviations of ELL by Condition for TEWL

	Experimental Group ($n = 20$)		Control Group ($n = 23$)		d
	M	SD	M	SD	
Pretest	7.89	5.41	6.46	5.05	0.06
Posttest	13.90	6.03	13.52	5.80	

Figure 9 is a graph of ELL student score growth in the intervention group versus the control group by TEWL-3 scores.

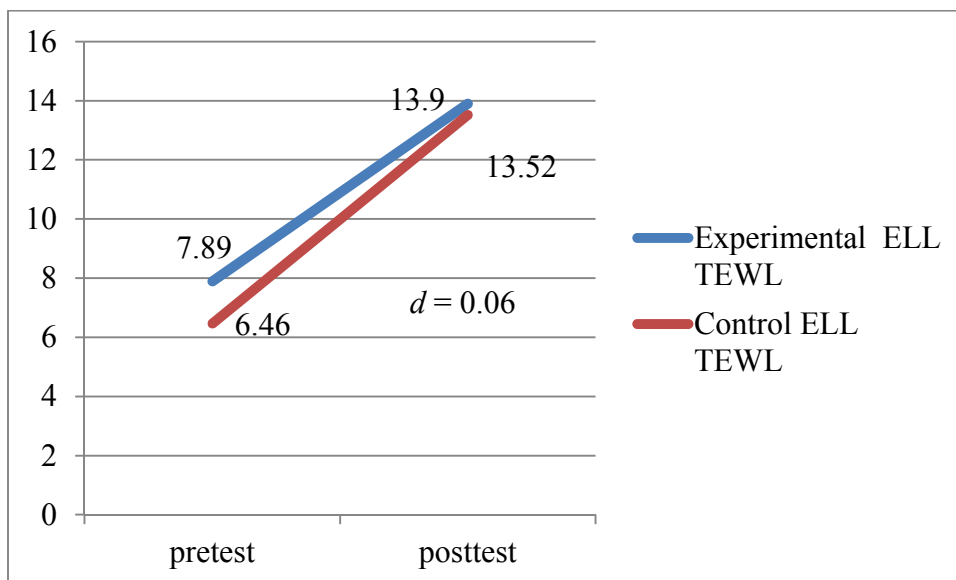


Figure 9. Student Performance on TEWL-3 ELL Raw Scores by Condition

To examine potential statistical difference on the TEWL-3 basic writing measure between the two groups, an ANCOVA test was conducted with SPSS using the condition of intervention versus comparison as in the independent variable, the TEWL-3 subtest 1-basic writing measure as the dependent variable, and the subtest 1- basic writing measure pre-test as a covariate. It was hypothesized that the intervention would show a significant group effect on the TEWL-3 basic writing skills between the interactive reading and writing experimental group and scaffolded writing control group of ELL pre-kindergarten students. Results of a one-way ANCOVA test indicated no significant effect on the TEWL-3 basic raw scores after controlling for the TEWL-3 subtest – 1 basic writing pretest score as a covariate. The TEWL-3 mean performance did not differ by treatment with the raw scores, $F(1,40) = .02$, $MSE = 24.41$, $p = .894$.

The research hypothesis was not confirmed. ELL students who received the interactive writing and reading component in addition to scaffolded writing did not make more progress on writing than students who did not receive interactive writing and reading treatment.

CPAA reading measure with ELL. A homogenous slopes test was conducted by subgroup. The test confirmed the relationship between CPAA pretest and posttest scores of ELL students did not differ by treatment with reading, $F(1,39) = .05$, $p = .824$; with listening, $F(1,39) = .15$, $p = .703$; with phonics, $F(1,39) = .09$, $p = .772$; or with phonemic awareness, $F(1,39) = .22$, $p = .642$, indicating that the CPAA pretest scores could be used as covariates in the MANCOVA model. See Table 7 for pretest scores and posttest means and standard deviations for CPAA scores.

Table 7

Means and Standard Deviations of ELL by Condition for CPAA

	Experimental Group (<i>n</i> = 20)		Control Group (<i>n</i> = 23)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Reading Pretest	29.55	16.08	26.47	15.87	0.14
Reading Posttest	54.60	13.90	52.35	17.07	
Listening Pretest	29.33	17.56	23.44	16.30	0.20
Listening Posttest	51.80	16.82	55.30	18.60	
Phonics Pretest	24.96	18.49	24.43	20.02	0.19
Phonics Posttest	48.65	30.22	53.96	25.75	
Phonemic Awareness Pretest	24.61	17.84	23.96	16.19	0.19
Phonemic Awareness Posttest	48.70	14.55	51.87	17.98	

Figure 10 is a graph of student mean CPAA reading growth scores in the intervention group versus the control group.

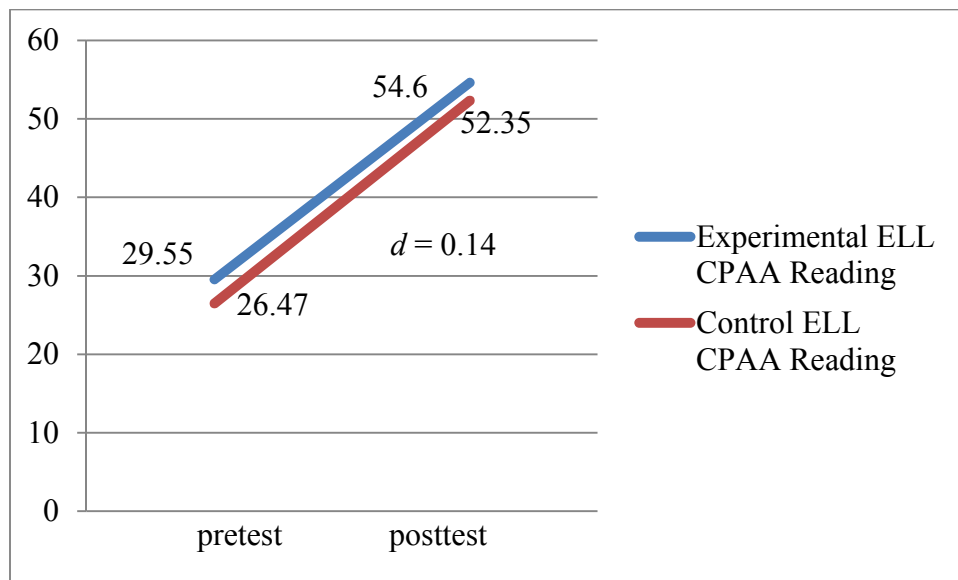


Figure 10. Student Performance on CPAA ELL Reading by Condition

Figure 11 is a graph of the CPAA listening growth score of students in the intervention group versus the control group.

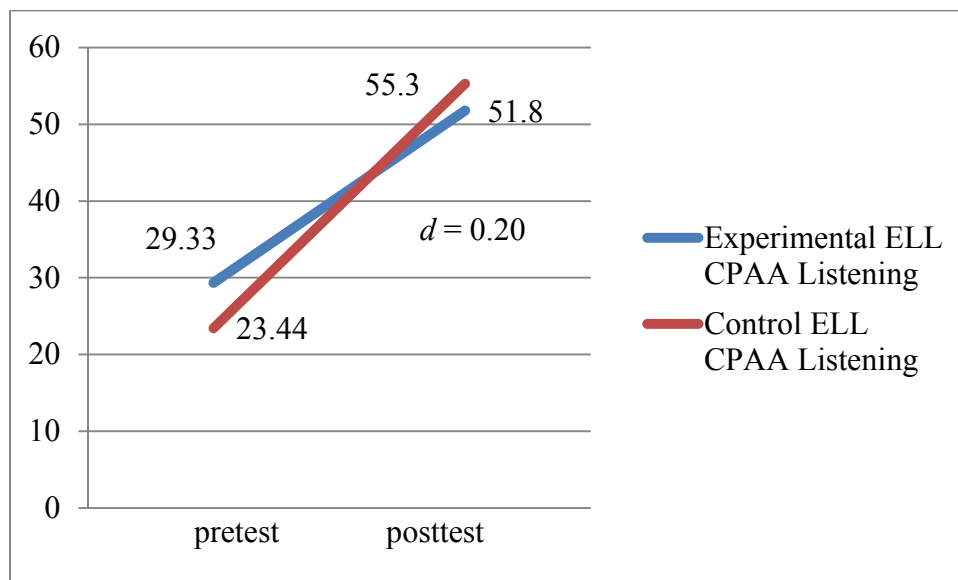


Figure 11. Student Performance on CPAA ELL Listening by Condition

Figure 12 is a graph of the CPAA phonics growth score of students in the intervention group versus the control group.

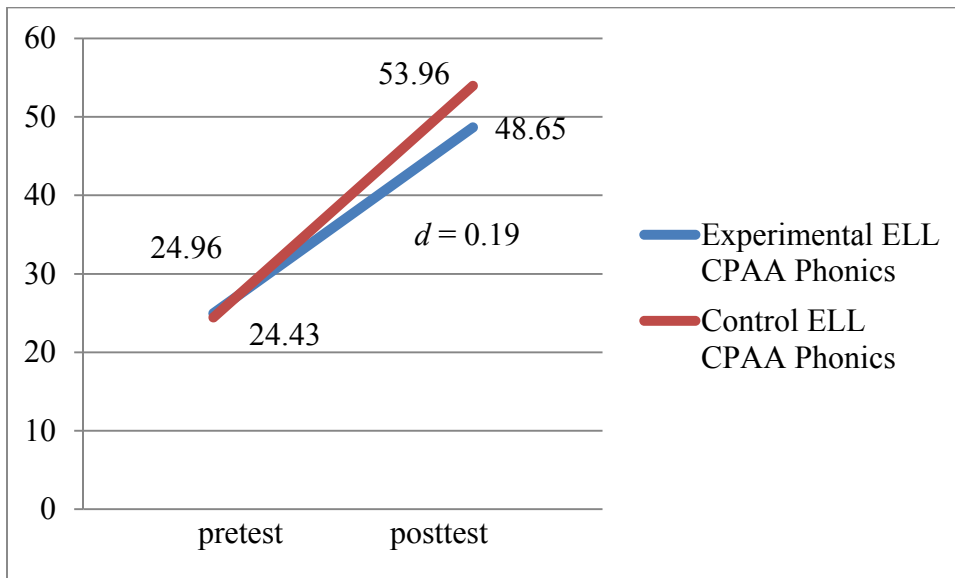


Figure 12. Student Performance on CPAA ELL Phonics by Condition

Figure 13 is a graph of the CPAA phonemic awareness growth score of students in the intervention group versus the control group.

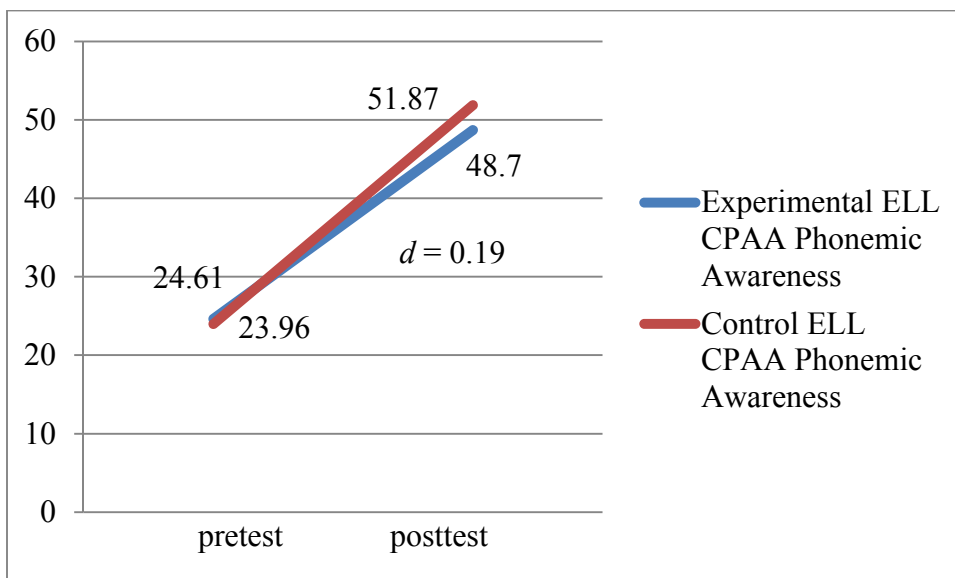


Figure 13. Student Performance on CPAA ELL Phonemic Awareness by Condition

To examine potential statistical difference between the two groups of ELL students, a MANCOVA test was conducted with reading, listening, phonics, and phonemic awareness as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate. A MANCOVA test was conducted four times with the CPAA standardized reading scores using each of the four pretest scores as a covariate and producing twelve univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect on the reading outcomes of reading, listening, phonics, and phonemic awareness between the interactive reading and writing experimental group and scaffolded writing control group of ELL pre-kindergarten students.

The first MANCOVA test was conducted on the linear combination of the CPAA posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of reading as a covariate for group difference. The MANCOVA test results showed a nonsignificant group effect, $F(4,37) = .104, p = .398$, $Wilks' \lambda = 0.90$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for reading pretest as covariate revealed a nonsignificant group effect, $F(1,40) = .05, MSE = 240.74, p = .827$. A second ANCOVA test for listening was not significant, $F(1,40) = 1.64, MSE = 257.83, p = .207$. A third ANCOVA test for phonics was not significant, $F(1,40) = .82, MSE = 752.04, p = .370$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,40) = 1.06, MSE = 250.179, p = .311$.

The second MANCOVA test was conducted on the linear combination of the posttest scores for CPAA reading, listening, phonics, and phonemic awareness after

controlling for the pretest scores of listening as a covariate for group difference. The MANCOVA test results did not show a significant group effect, $F(4,37) = .58, p = .681$, $Wilks' \lambda = 0.94$. A subsequent univariate ANCOVA test on reading posttest scores after controlling for listening pretest as covariate revealed a nonsignificant group effect for the group difference between experimental and control groups, $F(1,40) = .02, MSE = 199.15, p = .890$. A second ANCOVA test for listening was also nonsignificant, $F(1,40) = 1.46, MSE = 233.39, p = .235$. A third ANCOVA test for phonics was not significant, $F(1,40) = .48, MSE = 798.20, p = .492$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,40) = .52, MSE = 273.60, p = .476$.

The third MANCOVA test was conducted on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonics as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(4,37) = .94, p = .451, Wilks' \lambda = 0.90$. A subsequent univariate ANCOVA test on reading posttest scores after controlling for phonics pretest as covariate for the group difference between experimental and control groups did not reveal a significant group effect, $F(1,40) = .01, MSE = 222.50, p = .914$. A second ANCOVA test for listening was not significant, $F(1,40) = 1.41, MSE = 264.99, p = .242$. A third ANCOVA test for phonics was also nonsignificant, $F(1,40) = 1.06, MSE = 702.23, p = .309$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,40) = 1.11, MSE = 242.69, p = .298$.

The fourth MANCOVA test was conducted on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonemic awareness as a covariate for group difference. The

MANCOVA test results did not show a significant group effect, $F(4,37) = .41$, $p = .798$, $Wilks' \lambda = 0.96$. A subsequent univariate ANCOVA test for the group difference between experimental and control groups on reading posttest scores after controlling for phonemic awareness pretest as covariate revealed a nonsignificant group effect, $F(1,40) = .30$, $MSE = 249.19$, $p = .585$. A second ANCOVA test for listening was nonsignificant, $F(1,40) = .229$, $MSE = 312.18$, $p = .635$. A third ANCOVA test for phonics was nonsignificant, $F(1,40) = .29$, $MSE = 792.86$, $p = .591$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,40) = .18$, $MSE = 260.52$, $p = .676$.

The results of a four one-way MANCOVA revealed the overall multivariate test was not significant. Differences between the reading levels of the CPAA did not exist for on the four MANCOVAs on the CPAA standardized reading assessment. Subsequent ANCOVA were examined for univariate main effects. Results revealed that ELL students in the experimental group did not show more growth in reading skills than the control group as measured by the CPAA outcomes. The research hypothesis was not confirmed for reading outcomes on the standardized assessment with reading, listening, phonics, and phonemic awareness. The inclusion of interactive reading and writing instruction with scaffolding did not improve ELL pre-kindergarten student's reading, phonics, and phonemic awareness outcomes as measured by the standardized reading assessment.

COS measure with ELL. A homogenous slopes test was conducted by subgroup. The test confirmed the relationship between COS pretest and posttest scores for ELL students did not differ by treatment with print knowledge, $F(1,39) = .10$, $p = .750$; with sound knowledge, $F(1,39) = .09$, $p = .767$; or with letter recognition, $F(1,39) = .69$, $p = .410$, indicating that the COS pretest scores could be used as covariates

in the MANCOVA model. See Table 8 for means and standard deviations of COS pretest and posttest scores.

Table 8

Means and Standard Deviations of ELL by Condition for COS

	Experimental Group (<i>n</i> = 20)		Control Group (<i>n</i> = 23)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Sounds Pretest	0.60	2.05	0.35	1.16	0.11
Sounds Posttest	9.05	16.13	7.57	9.69	
Letters Pretest	12.24	15.23	8.63	13.66	0.11
Letters Posttest	22.00	20.13	24.09	19.24	
Print Pretest	3.54	2.83	3.27	3.12	0.25
Print Posttest	8.00	4.09	6.96	4.26	

Figure 14 is a graph of the ELL student score growth in the intervention group versus the control group by COS sounds measures.

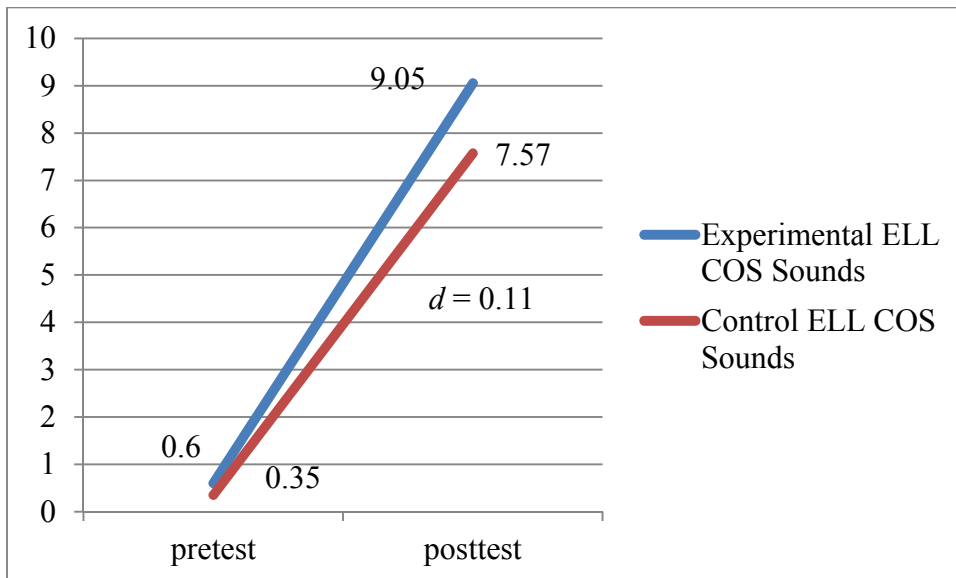


Figure 14. Student Performance on ELL COS Sounds Scores by Condition

Figure 15 is a graph of the ELL student score growth in the intervention group versus the control group by COS letters measures.

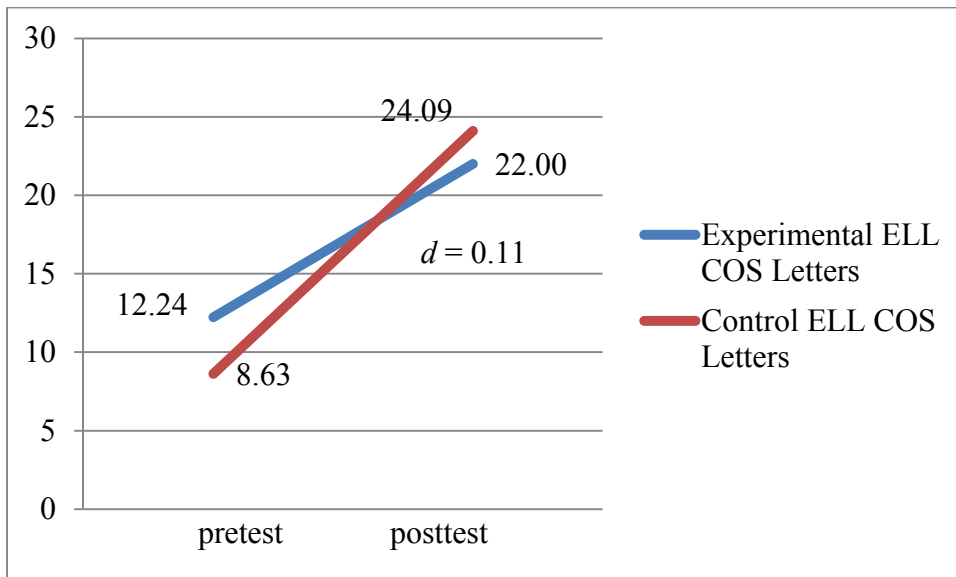


Figure 15. Student Performance on ELL COS Letters Scores by Condition

Figure 16 is a graph of the ELL student score growth in the intervention group versus the control group by COS print measures.

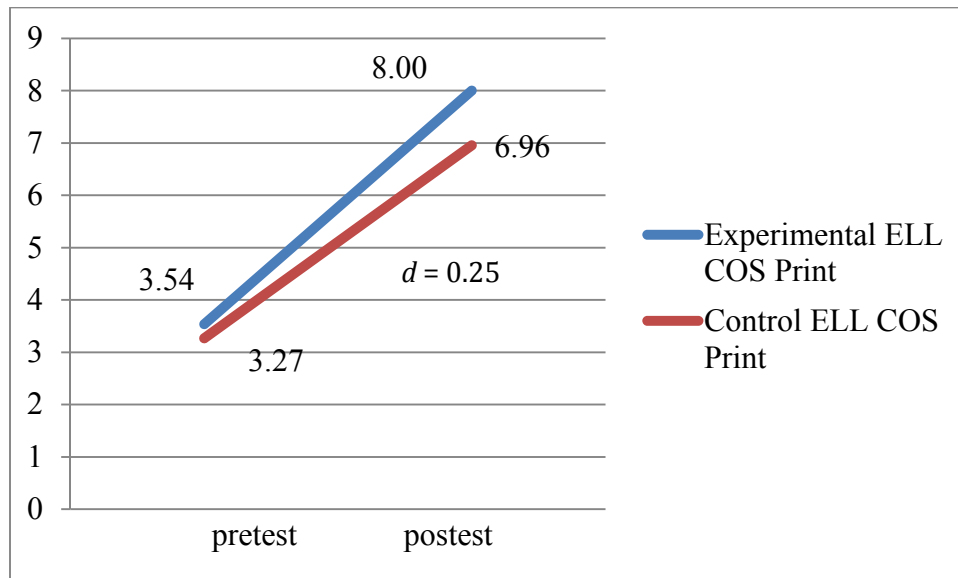


Figure 16. Student Performance on ELL COS Print Scores by Condition

To examine potential statistical difference between the two groups, a MANCOVA test was conducted with letter recognition, sound knowledge, and print knowledge as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate. The MANCOVA was conducted three times with the COS informal reading scores using each of the three pretest scores as a covariate and producing nine univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect on the reading outcomes of letter recognition, sound knowledge, and print knowledge between the interactive reading and writing experimental group and scaffolded writing control group of ELL pre-kindergarten students.

The first MANCOVA test was conducted on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of letter recognition as a covariate for group difference. The MANCOVA test results did not show a significant group effect, $F(3,38) = .89$, $p = .453$, $Wilks' \lambda = 0.93$. A subsequent univariate ANCOVA test for the group difference on letter recognition posttest scores after controlling for letter recognition pretest as covariate between experimental and control groups revealed a nonsignificant group effect, $F(1,40) = 1.83$, $MSE = 222.75$, $p = .184$. A second ANCOVA test for sound knowledge was significant, $F(1,40) = .07$, $MSE = 117.57$, $p = .787$. A third ANCOVA test for print knowledge was not significant, $F(1,40) = .10$, $MSE = 13.11$, $p = .757$.

The second MANCOVA test was conducted on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of sound knowledge as a covariate for group difference. The MANCOVA test results did not show a significant group effect, $F(3,38) = .67$, $p = .575$, $Wilks' \lambda = 0.95$. A subsequent univariate ANCOVA test for the group difference on letter recognition posttest scores after controlling for sound knowledge pretest as covariate between experimental and control groups revealed a nonsignificant group effect, $F(1,40) = .13$, $MSE = 391.79$, $p = .725$. A second ANCOVA test for sound knowledge was not significant, $F(1,40) = .14$, $MSE = 174.59$, $p = .711$. A third ANCOVA test for print knowledge was also not significant, $F(1,40) = .64$, $MSE = 17.59$, $p = .428$.

The third MANCOVA test was conducted on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after

controlling for the pretest scores of print knowledge as a covariate for group difference. The MANCOVA test results did not show a significant group effect, $F(3,38) = .86$, $p = .468$, $Wilks' \lambda = 0.94$. A subsequent univariate ANCOVA test for the group difference on letter recognition posttest scores after controlling for print knowledge pretest as covariate between experimental and control groups revealed a nonsignificant group effect, $F(1,40) = .09$, $MSE = 279.33$, $p = .768$. A second ANCOVA test for sound knowledge was significant, $F(1,40) = .32$, $MSE = 117.93$, $p = .574$. A third ANCOVA test for print knowledge was not significant, $F(1,40) = 1.39$, $MSE = 10.83$, $p = .246$.

The results of the three one-way MANCOVAs revealed the overall multivariate outcome was not significant. There was no difference in COS reading levels of the three MANCOVA procedures on the standardized reading assessment. Subsequent ANCOVA were examined for univariate main effects. Differences between the reading levels of the COS did not exist for letter recognition and print knowledge on the informal reading assessment, but sound knowledge did differ on two of the three ANCOVAs. The MANCOVA results for letter recognition, sound knowledge, and print knowledge were all nonsignificant, therefore the research hypothesis is not confirmed. These results indicated that ELL students in the experimental group did not indicate more growth in reading skills than the control group as measured by the COS outcomes of print knowledge and letter recognition. However, like the general population of pre-k participants, the ELL students grew in sound knowledge. The inclusion of interactive reading and writing instruction with scaffolding improves pre-kindergarten student's reading outcomes of sound knowledge but not letter recognition and print knowledge as measured by the informal COS reading assessment. Students who received the interactive

writing and reading component in addition to scaffolded writing made more progress with sound knowledge on reading and writing, but not with letter recognition and print knowledge, than students who did not receive interactive writing and reading treatment.

Students with disabilities. To answer the second part of the third quantitative question, data from one writing measure and two reading measures were analyzed with the SWD subgroup. The question asked, if the addition of interactive reading and writing instruction increases outcomes for pre-kindergarten students, is the instruction effective for some types of learners such as students with disabilities? To answer this question pertaining to SWD participants, a homogenous slope test was conducted in SPSS with TEWL-3 scores, CPAA scores, and COS scores and each subgroup of SWD participants by each condition.

TEWL writing measure with SWD. The test for homogenous slopes confirmed the relationship between TEWL-3 writing pretest and posttest raw scores of SWD students did not differ by treatment, $F(1,20) = .09, p = .774$, indicating that the TEWL-3 writing pretest scores could be used as covariates in the ANCOVA model. See Table 9 for means and standard deviations of SWD pretest scores and posttest scores.

Table 9

Means and Standard Deviations of SWD by Condition for TEWL

	Experimental Group ($n = 12$)		Control Group ($n = 12$)		d
	M	SD	M	SD	
Pretest	7.67	6.75	4.17	3.13	0.48
Posttest	16.67	8.06	13.17	6.47	

Figure 17 is a graph of the SWD student score growth in the intervention group versus the control group by TEWL-3 raw scores.

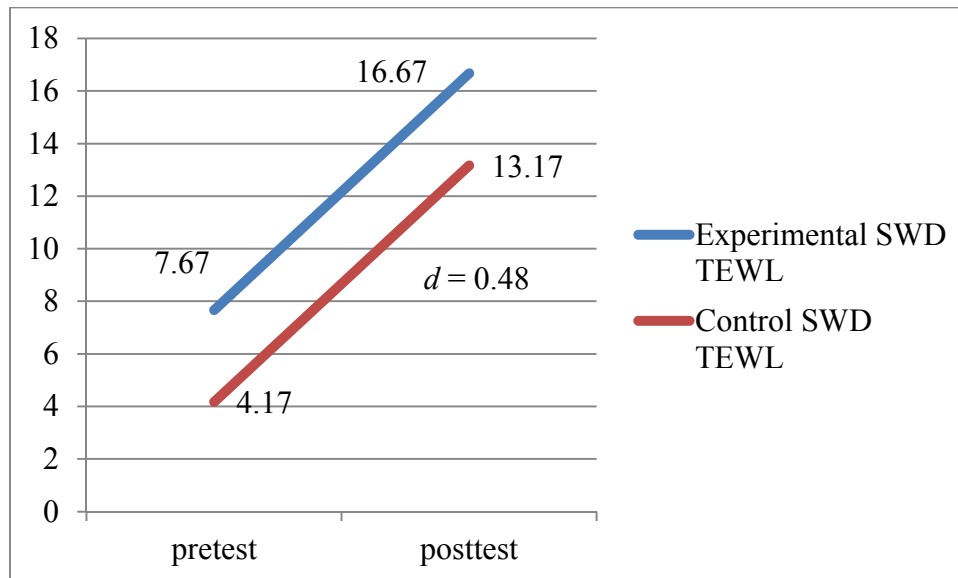


Figure 17. SWD Student Performance on TEWL Scores by Condition

To examine potential statistical difference between the two groups on the TEWL-3 basic writing measure with SWD students, an ANCOVA test was conducted using the condition of intervention versus comparison as in the independent variable, the TEWL-3 subtest 1- basic writing measure as the dependent variable, and the subtest 1- basic writing measure pre-test as a covariate. It was hypothesized that the intervention would show a significant group effect on the TEWL-3 basic writing skills between the interactive reading and writing experimental group and scaffolded writing control group of SWD pre-kindergarten students. Results of a one-way ANCOVA test indicated no significant effect on the TEWL-3 basic raw scores after controlling for the TEWL-3 subtest – 1 basic writing pretest score as a covariate. The TEWL-3 mean performance did not differ by treatment with the raw scores, $F(1,21) = .01$, $MSE = .29.74$, $p = .942$. The

research hypothesis was not accepted, although effect sizes for the TEWL were moderate. SWD students who received the interactive writing and reading component in addition to scaffolded writing did not make more progress on writing than students who did not receive interactive writing and reading treatment.

CPAA reading measure with SWD. A homogenous slopes test was conducted by subgroup that confirmed the relationship between CPAA pretest and posttest scores of SWD students did not differ by treatment with reading, $F(1,20) = 1.79, p = .196$; with listening, $F(1,20) = .11, p = .746$; with phonics, $F(1,20) = .02, p = .889$; or with phonemic awareness, $F(1,20) = .89, p = .356$, indicating that the four CPAA pretest scores could be used as covariates in the MANCOVA model. See Table 18 for means and standard deviations of CPAA pretest and posttest scores.

Table 10

Means and Standard Deviations of SWD by Condition for CPAA

	Experimental Group (<i>n</i> = 12)		Control Group (<i>n</i> = 12)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Reading Pretest	33.00	16.33	19.83	14.51	0.26
Reading Posttest	56.75	14.59	52.67	16.71	
Listening Pretest	34.33	17.56	15.75	11.19	0.11
Listening Posttest	56.92	18.97	54.75	19.34	
Phonics Pretest	27.33	18.63	22.58	18.70	0.18
Phonics Posttest	52.58	27.07	47.83	26.21	
Phonemic Aware. Pretest	31.50	21.43	21.42	17.53	0.28
Phonemic Aware. Posttest	57.33	15.61	52.08	21.37	

Figure 18 is a graph of the SWD student score growth in the intervention group versus the control group by CPAA reading measures.

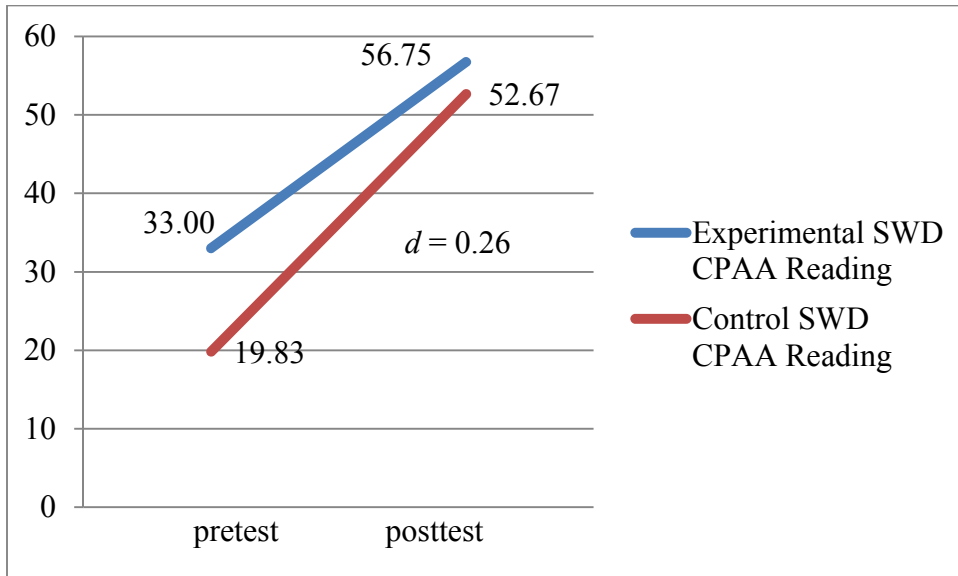


Figure 18. SWD Student Performance on CPAA Reading Scores by Condition

Figure 19 is a graph of the CPAA listening growth score of students in the intervention group versus the control group.

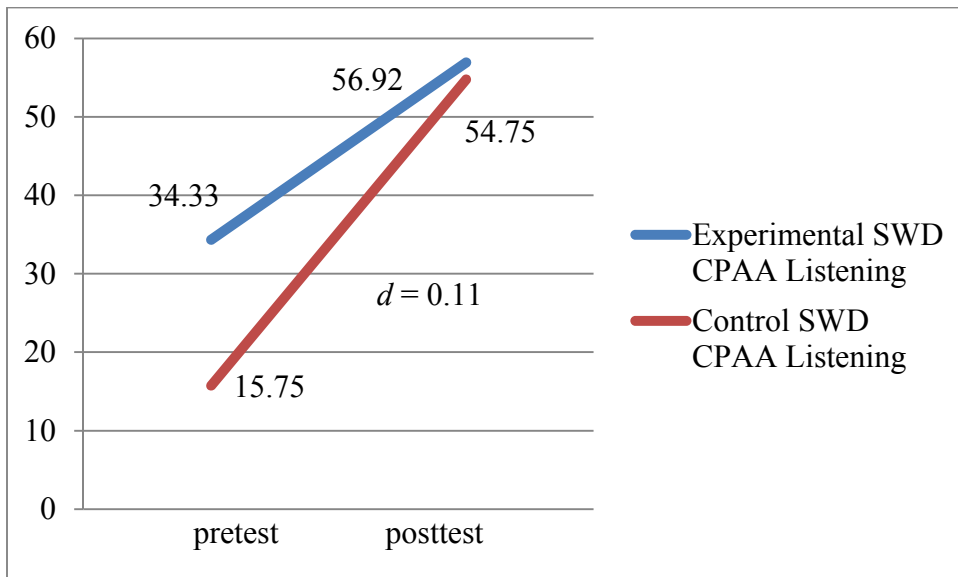


Figure 19. SWD Student Performance on CPAA Listening Scores by Condition

Figure 20 is a graph of the SWD student score growth in the intervention group versus the control group by CPAA phonics measures.

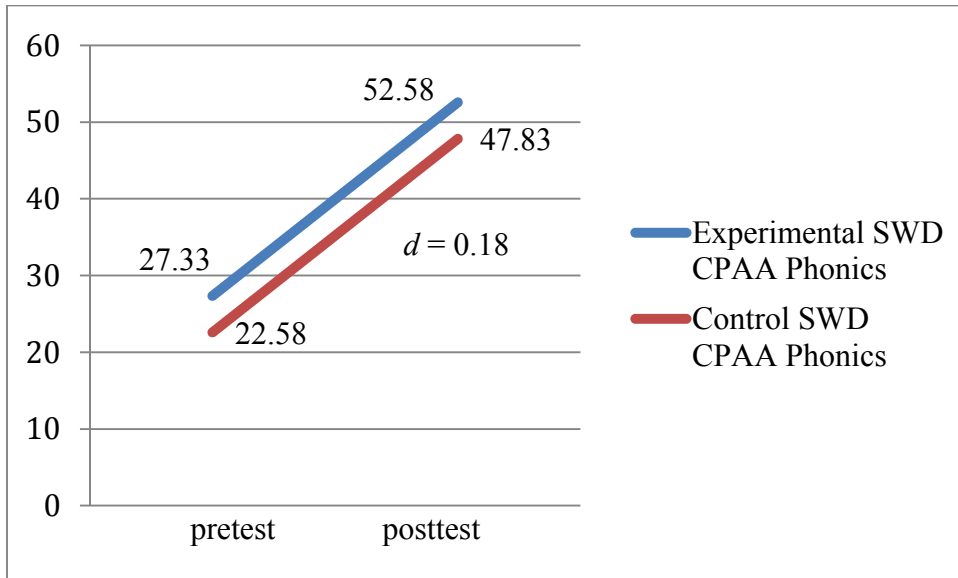


Figure 20. SWD Student Performance on CPAA Phonics Scores by Condition

Figure 21 is a graph of the CPAA phonemic awareness growth score of students in the intervention group versus the control group.

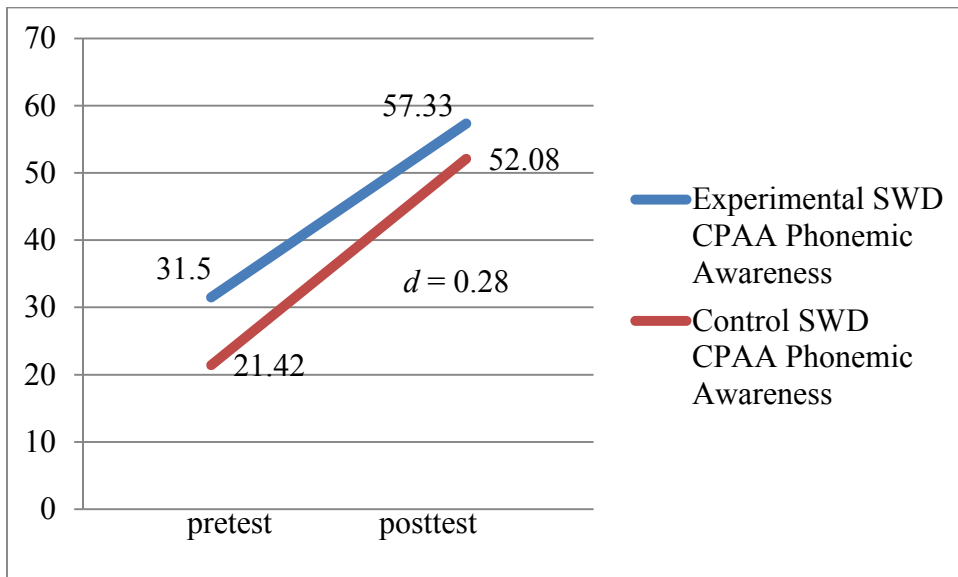


Figure 21. SWD Student Performance on CPAA Phonemic Awareness by Condition

To examine potential statistical difference on the CPAA standardized reading measure between the two groups of ELL students, a MANCOVA was conducted with SPSS with reading, listening, phonics, and phonemic awareness as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as a covariate. A MANCOVA test was conducted four times with the CPAA standardized reading scores using each of the four CPAA pretest scores as a covariate and producing twelve univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect and scaffolded writing control group on the reading outcomes of reading, listening, phonics, and phonemic awareness between the interactive reading and writing experimental group of SWD pre-kindergarten students.

The first MANCOVA test was conducted on the linear combination of the CPAA posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of reading as a covariate for group difference. The MANCOVA test results indicated a nonsignificant group effect, $F(4,18) = .31, p = .869$, *Wilks' λ* = 0.94. A subsequent univariate ANCOVA test on reading posttest scores after controlling for reading pretest as covariate for the group difference between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = .01, MSE = 236.43, p = .975$. A second ANCOVA test for listening was not significant, $F(1,21) = .84, MSE = 269.93, p = .369$. A third ANCOVA test for phonics was not significant, $F(1,21) = .17, MSE = 743.64, p = .684$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,21) = .02, MSE = 309.50, p = .894$.

The second MANCOVA test was conducted on the linear combination of the CPAA posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of listening as a covariate for group difference. The MANCOVA test results did not show a significant group effect, $F(4,18) = .34, p = .849$, $Wilks' \lambda = 0.93$. A subsequent univariate ANCOVA test for the group on reading posttest scores after controlling for listening pretest as covariate difference between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = 1.24, MSE = 245.06, p = .279$. A second ANCOVA test for listening was also nonsignificant, $F(1,21) = .171, MSE = 382.23, p = .683$. A third ANCOVA test for phonics was not significant, $F(1,21) = .806, MSE = 711.88, p = .380$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,21) = .62, MSE = 364.08, p = .441$.

The third MANCOVA test was conducted on the linear combination of the posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonics as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(4,18) = .06, p = .993, Wilks' \lambda = .99$. A subsequent univariate ANCOVA test for the group difference on reading posttest scores after controlling for phonics pretest as covariate between experimental and control groups did not indicate a significant group effect, $F(1,21) = .12, MSE = 181.31, p = .734$. A second ANCOVA test for listening was not significant, $F(1,21) = .01, MSE = 353.96, p = .919$. A third ANCOVA test for phonics was also nonsignificant, $F(1,21) = .01, MSE = 516.35, p = .916$. A fourth ANCOVA test for phonemic awareness was not significant, $F(1,21) = .22 = 314.24, p = .642$.

The fourth MANCOVA test was conducted on the linear combination of the CPAA posttest scores for reading, listening, phonics, and phonemic awareness after controlling for the pretest scores of phonemic awareness as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(4,18) = .18$, $p = .947$, $Wilks' \lambda = .96$. A subsequent univariate ANCOVA test for the group difference on reading posttest scores after controlling for phonemic awareness pretest as covariate between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = .32$, $MSE = 257.76$, $p = .575$. A second ANCOVA test for listening was also nonsignificant, $F(1,21) = .01$, $MSE = 349.56$, $p = .920$. A third ANCOVA test for phonics was also nonsignificant, $F(1,21) = .01$, $MSE = 694.12$, $p = .915$. The fourth ANCOVA test for phonemic awareness was not significant, $F(1,21) = .31$, $MSE = 364.71$, $p = .583$.

The results of the four one-way MANCOVAs revealed the overall multivariate test was not significant. Differences between the reading levels of the CPAA did not exist on the four MANCOVAs on the CPAA standardized reading assessment. Subsequent ANCOVA were examined for univariate main effects. Differences between the reading levels of the CPAA did not exist for the four MANCOVAs on the standardized reading assessment. The results revealed that students in the experimental group did not show more growth in reading skills than the control group as measured by the CPAA outcomes. The research hypothesis was not confirmed for on the standardized assessment of reading, listening, phonics, and phonemic awareness. The inclusion of interactive reading and writing instruction with scaffolding did not improve pre-

kindergartener's with disabilities on outcomes of reading, phonics, and phonemic awareness as assessed by the standardized reading assessment.

COS reading measure with SWD. A homogenous slopes test was conducted by subgroup. The test confirmed that the relationship between COS pretest and posttest scores for SWD students did not differ by treatment with print knowledge, $F(1,20) = .69$, $p = .418$; with sound knowledge, $F(1,20) = .13$, $p = .725$; or with letter recognition, $F(1,20) = .66$, $p = .427$, indicating that the three COS pretest scores could be used as covariates in the MANCOVA model. Table 11 includes means and standard deviations of COS pretest scores and posttest scores.

Table 11

Means and Standard Deviations of SWD by Condition for COS

	Experimental Group ($n = 12$)		Control Group ($n = 12$)		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Sounds Pretest	1.08	12.00	0.33	1.16	0.59
Sounds Posttest	11.50	16.49	4.00	7.46	
Letters Pretest	10.25	12.00	10.91	16.40	0.18
Letters Posttest	23.08	17.93	19.75	19.37	
Print Pretest	3.75	3.30	2.83	2.52	0.22
Print Posttest	9.08	6.08	7.83	5.20	

Figure 22 is a graph of SWD student score growth in the intervention group versus the control group by COS sounds measures.

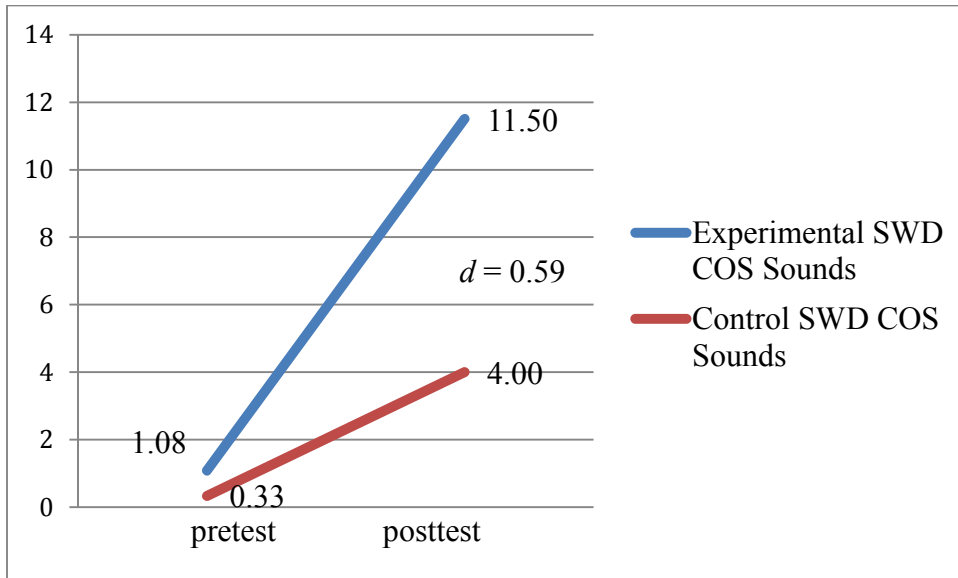


Figure 22. SWD Student Performance on COS Sounds Scores by Condition

Figure 23 is a graph of SWD student score growth in the intervention group versus the control group by COS letters measures.

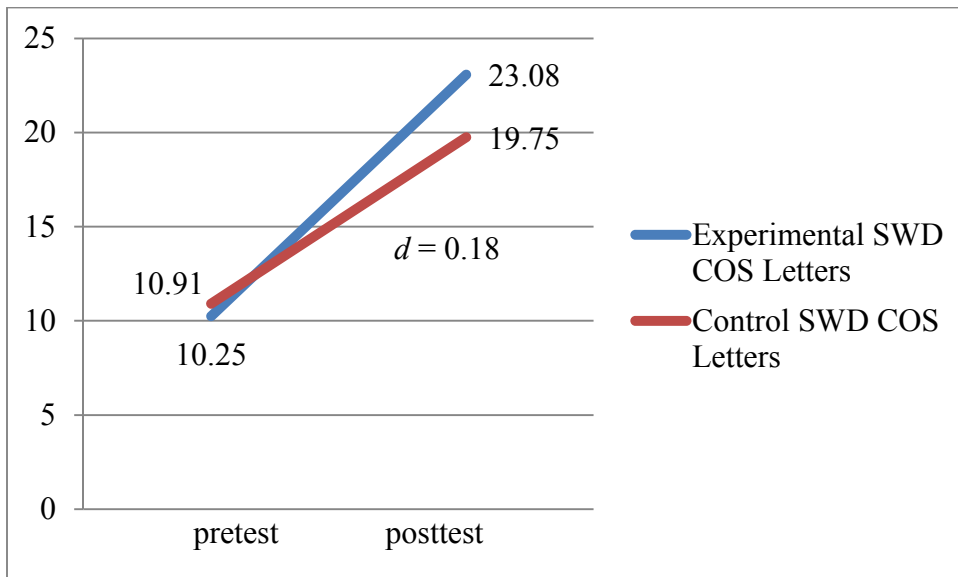


Figure 23. SWD Student Performance on COS Letters Scores by Condition

Figure 24 is a graph of SWD student score growth in the intervention group versus the control group by COS print measures.

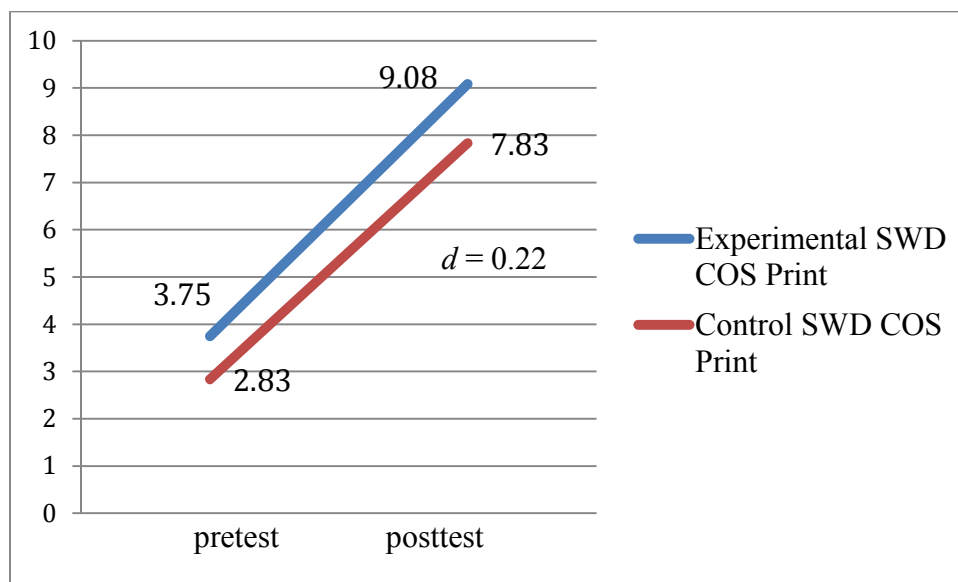


Figure 24. SWD Student Performance on COS Print Scores by Condition

To examine potential statistical difference on the informal COS reading measure between the two groups, a MANCOVA test was conducted with letter recognition, sound knowledge, and print knowledge as the dependent variables, condition of intervention versus comparison as the independent variable, and the pretest scores as covariates. The MANCOVA test was conducted three times with the COS informal reading scores using each of the three COS pretest scores as a covariate and producing nine univariate ANCOVAs. It was hypothesized that the intervention would show a significant group effect on the reading outcomes of letter recognition, sound knowledge, and print knowledge between the interactive reading and writing experimental group and scaffolded writing control group of SWD pre-kindergarten students.

The first MANCOVA test was conducted on the linear combination of the COS posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of letter recognition as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(3,19) = 1.11$, $p = .371$, $Wilks' \lambda = 0.86$. A subsequent univariate ANCOVA test for the group difference on letter recognition posttest scores after controlling for letter recognition pretest as covariate between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = .76$, $MSE = 122.98$, $p = .393$. A second ANCOVA test for sound knowledge was not significant, $F(1,21) = 3.55$, $MSE = 103.47$, $p = .195$. A third ANCOVA test for print knowledge was not significant, $F(1,21) = .11.65$, $MSE = 20.54$, $p = .460$.

The second MANCOVA test was conducted on the linear combination of the COS posttest scores for letter recognition, sound knowledge, and print knowledge after controlling for the pretest scores of sound knowledge as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(3,19) = .99$, $p = .418$, $Wilks' \lambda = .87$. A subsequent univariate ANCOVA test on letter recognition posttest scores after controlling for sound knowledge pretest for the group difference between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = .04$, $MSE = 345.98$, $p = .837$. A second ANCOVA test for sound knowledge was not significant, $F(1,21) = 1.79$, $MSE = 171.36$, $p = .195$. A third ANCOVA test for print knowledge was not significant, $F(1,21) = .17$, $MSE = 33.11$, $p = .685$.

The third MANCOVA test was conducted on the linear combination of the posttest scores for letter recognition, sound knowledge, and print knowledge after

controlling for the pretest scores of print knowledge as a covariate for group difference. The MANCOVA test results did not indicate a significant group effect, $F(3,19) = .71$, $p = .560$, $Wilks' \lambda = 0.90$. A subsequent univariate ANCOVA test for the group difference on letter recognition posttest scores after controlling for print knowledge pretest as covariates between experimental and control groups revealed a nonsignificant group effect, $F(1,21) = .03$, $MSE = 316.55$, $p = .870$. A second ANCOVA test for sound knowledge was not significant, $F(1,21) = 1.39$, $MSE = 138.62$, $p = .251$. A third ANCOVA test for print knowledge was not significant, $F(1,21) = .04$, $MSE = 25.79$, $p = .850$.

Subsequent ANCOVA were examined for univariate main effects. The MANCOVA test results for letter recognition, sound knowledge, and print knowledge were all nonsignificant, therefore the research hypothesis was not confirmed. The results indicated that SWD students in the experimental group did not show more growth in reading skills than the control group as measured by the COS outcomes of print knowledge, sound knowledge, and letter recognition.

Student surveys. Students often enter the first year of school with attitudes and perspectives gained from prior experiences of reading and writing. These literacy experiences, or the lack of literacy experiences, often produce dispositions toward reading and writing at school. To capture student literacy attitudes and perspectives, an Elementary Reading Attitude Survey (McKenna & Stahl, 2009) was adapted for use with pre-kindergarten students. Instead of the 20 questions recommended in the original survey, this survey contained only ten questions, with five questions assessing reading

and five questions assessing writing. A shorter measure was created for pre-k in order to respect the attention-span of four-year-olds and still assess attitudes toward literacy.

The student survey was administered to all pre-k participants at both the beginning and end of the research study. The survey was based on a Likert scale of 1 to 4. Students chose a Garfield picture that accurately reflected their attitude to answer each specific question. The 10-question survey was coded according to each Garfield picture: happy (1), satisfied (2), sad (3), or angry (4). Table 12 shows means and standard deviations for each group according to each of the ten questions on the survey.

A test for homogenous slopes confirmed the relationship between student survey reading pretest scores and student survey reading posttest scores did not differ by treatment, $F(1,170) = .88$, $p = .349$, indicating that the pretest scores could be used as a covariate in the ANCOVA test. A test for homogenous slopes confirmed the relationship between student survey writing pretest scores and student survey writing posttest scores did not differ by treatment, $F(1,170) = .39$, $p = .533$, indicating that the pretest scores could be used as a covariate in the ANCOVA test.

To examine potential statistical difference between the two groups on the student survey reading answers, an ANCOVA test was conducted using the condition (intervention vs. comparison) as the independent variable, the student survey reading posttest scores as the dependent variable, and the reading pre-test as a covariate. It was hypothesized that the intervention would show a significant group effect between the interactive reading and writing experimental group and scaffolded writing control group on reading motivation of pre-kindergarten students. Results of a one-way ANCOVA

indicated no significant effect on the student survey reading scores after controlling for the student survey reading pretest score as a covariate. The student survey reading mean

Table 12

Means and Standard Deviations by Survey Question by Condition

Survey Question	Control group (<i>n</i> = 89)		Experimental group (<i>n</i> = 85)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Reading at home	1.58	0.99	1.71	1.06
Pre Intervention Survey	1.53	0.95	1.69	1.10
Post Intervention Survey				
Reading at school	1.75	0.97	1.72	1.02
Pre Intervention Survey	1.74	1.07	1.51	0.92
Post Intervention Survey				
Others reading to child	1.92	1.15	1.76	1.11
Pre Intervention Survey	1.73	1.07	1.74	1.54
Post Intervention Survey				
Reading alone	2.34	1.25	1.99	1.28
Pre Intervention Survey	2.02	1.26	2.05	1.25
Post Intervention Survey				
Reading and not playing	2.54	1.32	2.22	1.23
Pre Intervention Survey	2.38	1.34	2.11	1.19
Post Intervention Survey				
Writing at home	1.88	1.23	1.98	1.21
Pre Intervention Survey	1.61	1.06	1.46	0.88
Post Intervention Survey				
Writing at school	1.85	1.10	1.98	1.10
Pre Intervention Survey	1.71	1.11	1.52	0.85
Post Intervention Survey				
Others writing with child	1.94	1.16	1.95	1.16
Pre Intervention Survey	1.45	0.87	1.51	0.88
Post Intervention Survey				
Writing alone	2.03	1.21	2.27	1.31
Pre Intervention Survey	1.91	1.22	1.96	1.14
Post Intervention Survey				
Writing and not playing	2.38	1.22	2.40	1.28
Pre Intervention Survey	2.21	1.31	2.17	1.28
Post Intervention Survey				

performance did not differ by treatment with the scores, $F(1,171) = 1.81$, $MSE = .51$, $p = .180$. Therefore, the research hypothesis was not confirmed. Students who received the interactive writing and reading component in addition to scaffolded writing did not score higher in the reading motivation posttest survey than students who did not receive interactive writing and reading treatment in the same survey.

To examine potential statistical difference between the two groups on the student survey writing answers, a second ANCOVA test was conducted using the condition (intervention vs. comparison) as the independent variable, the student survey writing posttest scores as the dependent variable, and the writing pre-test as a covariate. It was hypothesized that the intervention would show a significant group effect between the interactive reading and writing experimental group and scaffolded writing control group on writing motivation of pre-kindergarten students. Results of a one-way ANCOVA indicated no significant effect on the student survey writing scores after controlling for the student survey writing pretest score as a covariate. The student survey writing mean performance did not differ by treatment with the scores, $F(1,171) = .01$, $MSE = .66$, $p = .937$. Therefore, the research hypothesis was not confirmed. Students who received the interactive writing and reading component in addition to scaffolded writing did not score higher on writing motivation posttest survey than students who did not receive interactive writing and reading treatment in the same survey.

A paired-samples t-test was conducted to compare the pretest scores and the posttest scores on the reading motivation subtest of the student survey. It was hypothesized that the full sample would show a significant increase between pretest and posttest scores on reading motivation of pre-kindergarten students. There was a

significant difference in the reading pretest scores ($M = 15.97$, $SD = 6.28$) and posttest scores ($M = 30.33$, $SD = 11.90$) for reading motivation; $t(173) = 33.58$, $p = <.001$. These results suggest that the reading motivation increased for all pre-kindergarten students.

A second paired-samples t-test was conducted to compare the pretest scores and the posttest scores on the writing motivation scores of the student survey. It was hypothesized that the full sample would show a significant increase between pretest and posttest scores on writing motivation of pre-kindergarten students. There was a significant difference in the pretest scores for writing ($M = 103.54$, $SD = 40.72$) and posttest scores ($M = 204.89$, $SD = 80.44$) writing motivation scores; $t(173) = 33.66$, $p = <.001$. These results suggest that the writing motivation increased for all pre-kindergarten students, regardless whether they were in the experimental group or the control group.

When looking at the item response percentages of the student survey, further information is revealed concerning reading and writing responses. For all ten questions, the “happy” category had the largest percentage of answers for both pretest and posttest. The five questions pertaining to writing received higher percentages of “happy” answers in the posttest than the five reading questions. Student survey item response percentages are shown in Table 13.

Writing. When asked how the students felt about writing at home 56.3% of the students responded at pretest by coloring the Garfield “happy”. The percentage of students answering “happy” on the same question increased to 71.8% at posttest. This question had the highest percentage of “happy” answers on the posttest survey. When students were asked how they felt when someone writes with them, the majority of

students answered “happy” at pretest and at posttest. The percentages on this question increased from 51.7% to 70.1%. When students were asked how they felt about writing at school, 49.4% of the students chose “happy” at pretest and 66.1% of the students answered “happy” at posttest. When students were asked how they felt about writing instead of playing, 36.2% of the students answered “happy” at pretest and 47.6% of the students answered “happy” at posttest. The last question pertaining to writing asked students how they felt about writing by themselves. The answer that students gave most often was “happy”, with 47.1% at pretest and 55.2% at posttest.

Table 13

Survey Question Item Response Percentages

Question	Happy	Satisfied	Sad	Angry
1. Pretest	63.8%	20.1%	4.0%	12.1%
Posttest	67.2%	16.7%	4.0%	12.1%
2. Pretest	55.2%	26.4%	8.0%	10.3%
Posttest	64.9 %	18.4%	5.7%	10.9%
3. Pretest	56.3%	19.0%	8.6%	16.1%
Posttest	64.4%	15.5%	6.9%	12.6%
4. Pretest	47.7%	13.8%	12.6%	25.9%
Posttest	54.0%	10.9%	12.6%	22.4%
5. Pretest	38.5%	15.5%	14.9%	31.0%
Posttest	44.8%	12.1%	16.7%	26.4%
6. Pretest	56.3%	16.1%	6.3%	21.3%
Posttest	71.8%	12.6%	5.7%	9.8%
7. Pretest	49.4%	25.3%	9.8%	15.5%
Posttest	66.1%	16.1%	8.0%	9.8%

Table 13 (continued)

8. Pretest	51.7%	19.5%	10.9%	17.8%
Posttest	70.1%	19.5%	2.9%	7.5%
9. Pretest	47.1%	16.7%	10.3%	25.9%
Posttest	55.2%	13.2%	14.4%	17.2%
10. Pretest	36.2%	17.8%	16.7%	29.3%
Posttest	47.7%	13.2%	11.5%	27.6%

Reading. The student responses to all five reading questions showed slight increases of percentages with “happy” responses from pretest to posttest. When students were asked how they felt about reading at school, 55.2% students responded “happy” at pretest and 64.9% responded “happy” at posttest. When students were asked how they felt when someone reads to them, 56.3% of the students were “happy” at pretest and 64.4% were “happy” at posttest. Question number four asked students how they felt about reading by themselves. On this question 47.7% of the students answered “happy” at pretest and 54.9% answered “happy” at posttest. The fifth question asked students how they felt about reading instead of playing. There were small changes in percentages with 38.5% answering “happy” at pretest and 44.8% responding “happy” at posttest. The question with the least amount of change in percentages from pre to posttest asked students how they felt about reading books at home. At pretest 63.8% of students responded “happy” and 67.2% responded “happy” at posttest. Both the “reading instead of playing” and “writing instead of playing” questions received the least amount of “happy” responses.

Qualitative Data

Data analysis consisted of reading through transcripts and forming emergent themes (Merriam, 2009) in order to answer the qualitative research question: Do qualitative measures of pre-kindergarten students receiving the interactive reading and writing instruction support findings of quantitative measures with regards to literacy attitudes and perspectives? Through ongoing review, reflection, and coding of the transcripts, themes and topics of meaning were constructed. These topics and themes were categorized by relationships that were consistent across the data. From this process, major categories of reading and writing developed from teacher and student interviews.

Student interviews. One-on-one interviews were conducted pre and post study with students who were randomly selected from each of the nine classrooms from both the treatment and control group ($n = 6$) representing two ELL participants, two SWD participants, and two students not qualifying as either ELL or SWD. The pair of students from each classroom represented the experimental and control groups. Pre-interviews were transcribed and evaluated for themes and anomalies among students in attitudes toward reading and writing, as well as, a correlation to student scores on reading and writing outcomes. A research assistant highlighted reoccurring themes and patterns, then coded responses according to categories. Trends of answers can be noticed among both the control and experimental group answers in the pre-interview. Student answers commonly included “family, mommy, home, school,” and “library”. Students also mentioned specific book titles they preferred to read, and favored opportunities to read at home with a family member. Students associated pictures, drawing, words, and letters with reading and writing.

Post-interviews were analyzed in the same manner as the pre-interviews after the research was completed. Most responses were similar for both pre and post-interviews for students in the control group; however, there were few differences in the post-interview that reflected more awareness of writing acquisition by students in both groups. Two graphics were created to represent similar student answers and concepts for both the pre-interviews and the post-interviews in clear visuals. Figure 25 illustrates student pre-interview perceptions of emergent literacy. Figure 26 illustrates student post-interview perceptions of emergent literacy. Detailed descriptions follow each graphic.

In both the pre- and post-interviews, students were asked the same set of ten questions. The first five questions asked students about reading, including if they were a good reader, where they learned to read, what they liked and disliked about reading. The second set of five questions pertained to writing, and asked students if they were a good writer, where they learned to write, and also what they liked and disliked about writing. Students answered each of the ten interview questions verbally. Responses were generally brief, but occasionally a student would elaborate with some comments. Generally, English language learners and students with disabilities frequently gave shorter answers, while regular education students sometimes elaborated with a more detailed answer. For example, when students were asked how people learn to read and write, typical answers from ELL and SWD participants were “at the school”, “house”, or “don’t know”. Regular education student responses included, “we can get some paper and draw with a pencil”, and “daddies and mommies and grandmas teach them how to read and write and color”. Table 14 summarizes the student interview data of student self-perceptions of reading and writing.

Table 14

Summary of Student Self-Perceptions of Reading and Writing by Condition

Interview Question	Experimental			Control		
	ELL	SWD	Typical Learner	ELL	SWD	Typical Learner
1. Are you a good reader?						
Pre	Yes	Yes. No. Almost.	Yes	Yes	Yes	Yes
Post	Yes. No.	Yes.	Yes. No. Good at drawing.	Yes.	Yes. No, my teacher is.	Yes. No, I can't read.
2. Where did you learn to read?						
Pre	School. My house. Mommy.	School. Library.	Teacher. Library. Church. Home.	Library. School. Home.	Taught myself. Mommy.	Momma. I write words. Teacher.
Post	House. Bookstore.	Teacher. Library. Mommy.	Library. Home. School.	Home. Library.	School. Library.	Home. Teacher. School.
3. What is the best thing about reading?						
Pre	Specific books. Reading w/ family.	Reading. Specific books. ABCs.	Reading with family. Specific books.	Reading with friends. ABCs.	Drawing. Granny's house. Family.	Reading at home. Specific books.
Post	Reading specific books of interest.	Reading specific books. Pictures.	Reading specific books. Go to kindergarten.	Making books. Reading by myself.	Don't know.	Family reading. Writing. Pictures.
4. What do you dislike about reading?						
Pre	Can't read alone. No one reads.	Specific books. No books	Family doesn't read.	Want to keep reading.	Specific books.	Nobody reads to me.
Post	Don't know.	Don't know.	Not reading by myself.	Don't know.	Don't know.	Family not reading.

Table 14 (continued)

Summary of Student Self-Perceptions of Reading and Writing by Condition

5. What do people do to get better with reading and writing?						
Pre	Home. School. Don't know.	Home. School. Don't know.	Home. Library. Drawing. Writing.	Don't know. Learn by myself.	Specific books. School.	Library. School. Already know how.
Post	Don't know.	Teacher.	Use a pen. Concentrate.	Going to pre-k.	Don't know.	Learning words.
6. Are you a good writer?						
Pre	Yes.	Yes. I can draw.	Yes. No.	Yes.	Yes.	Yes.
Post	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.
7. Where did you learn to write?						
Pre	Home. Mom & Dad.	Mommy. School. Home. Library.	Home with family. School. Library.	School. Teacher. Home with Mommy.	Books. Mommy. Pencils & markers.	Taught myself. School. Mommy.
Post	Home. I read things.	Mommy. Writing my name.	Home. Mommy.	Home. School. Nobody.	Don't know.	Home. Library. Teachers.
8. What do you like best about writing?						
Pre	School. Writing letters.	Drawing. Writing stories & my name.	Writing words. Drawing. School.	School. Writing my stories.	Books. I can write my name.	Drawing. Writing about my family.
Post	Learning to write words.	Learning things.	Drawing. Writing your own books.	Being a good writer.	Practicing writing.	Practicing. Writing on the board.
9. What is the worst thing about writing?						
Pre	Family.	Writing baby stuff.	Don't know which letters to write first.	No. It's much too hard.	It's hard to write.	Nobody writes. Hard words.

Table 14 (continued)

Summary of Student Self-Perceptions of Reading and Writing by Condition

Post	Don't know.	Don't know.	Drawing. Writing words.	Writing by myself.	Don't know.	Can't write words.
10. What can you do to be a better reader and writer?						
Pre	Don't know.	Someone teaching. Drawing.	Teacher. Drawing. Letters.	Don't know.	Mommy.	Teaching. Mommy reading.
Post	Learn how to tell a story.	Teaching myself. Reading.	Writing. Family reading.	Writing words. Reading.	Teach others to write.	Things to write. Learning.

Note. Adapted from *Assessment for Reading Instruction*, McKenna and Stahl. 2009.

The following graphic captures the results of student pre-interview questions for answers in both the experimental and control groups, illustrating the similar perceptions and understandings of pre-k students before the treatment began. The pre-interviews responses fell into three broad categories concerning student perceptions of literacy.

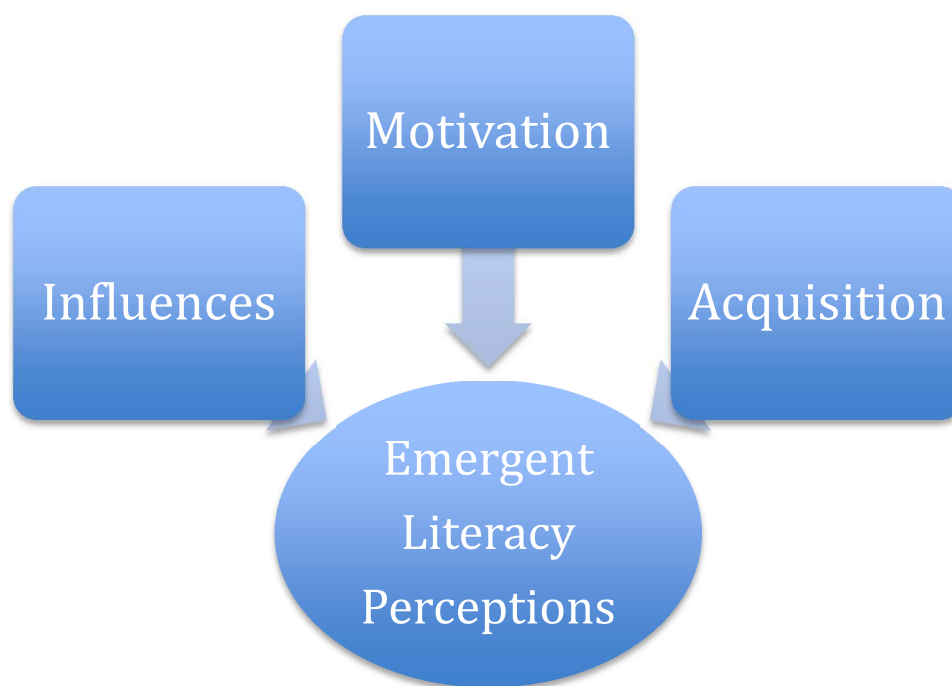


Figure 25: Student Pre-interview Perceptions of Emergent Literacy

Three themes of literacy acquisition emerged from the interviews, demonstrating student perceptions of reading and writing.

Influences. These young students' perceptions of reading and writing were influenced greatly by their home environment and family members. Students often credited their parents for teaching the student to read. Student response reflected positive experiences at home with parents, siblings, and grandparents. Students often associated reading books with a particular time such as bedtime, and also voiced displeasure when the parent was unable to read at home. One student reflected, "I don't like it when my mommy doesn't read me stories at night time." The library was mentioned as a resource for reading books and learning to read.

Motivation. Students named favorite titles of books they enjoy reading at home such as “dinosaurs”, “princesses”, and “Mickey Mouse”. Students often associated writing as “fun” at home with drawing a favorite picture, coloring, writing ABC’s, writing letters and words. One student expressed her motivation as “writing is fun because I get to write about my whole family”. Another stated, “I can write people and that’s the best thing to do.” Students also had mostly positive comments about their writing abilities and seemed motivated to write, such as this comment, “writing is fun at home”, and this comment, “I can write a story so I can read it.” Writing was also associated with drawing, the ability of the child to write their name, and the use environmental print for spelling. One student stated, “I look at the name tabs to write words”. Some students expressed frustration with their inability to write some words, draw particular shapes, or write all the letters they needed to write. One student expressed “I am sad when I don’t have any paper or crayons”. Another student said, “I can’t write by myself”. Another found writing a difficult task as he stated, “I don’t want to write baby stuff”.

Acquisition. Most of the students perceived themselves as good readers and writers during the pre-interview, viewing reading and writing as something “people are taught to do”. Occasionally a child would admit to being confused about the process by stating, “I don’t know” how people learn to read and write, implying recognition of a process but no understanding of the stages in the process. One student admitted, “it’s hard not to scribble scrabble”, which reflects the developmental stages in the process of writing acquisition.

Generally students associated reading and writing with home and family, as well as, at school with their teacher. Sometimes students acknowledged that they needed an adult (More Knowledgeable Other) to help them and specific tools for writing such as “pencils, markers, and crayons”. Writing experiences were connected with reading, as students discussed drawing pictures, letters, words, and “ABC’s”.

The following graphic shows the final three categories of learned concepts, illustrating the different perceptions and understandings of pre-k students after the treatment.

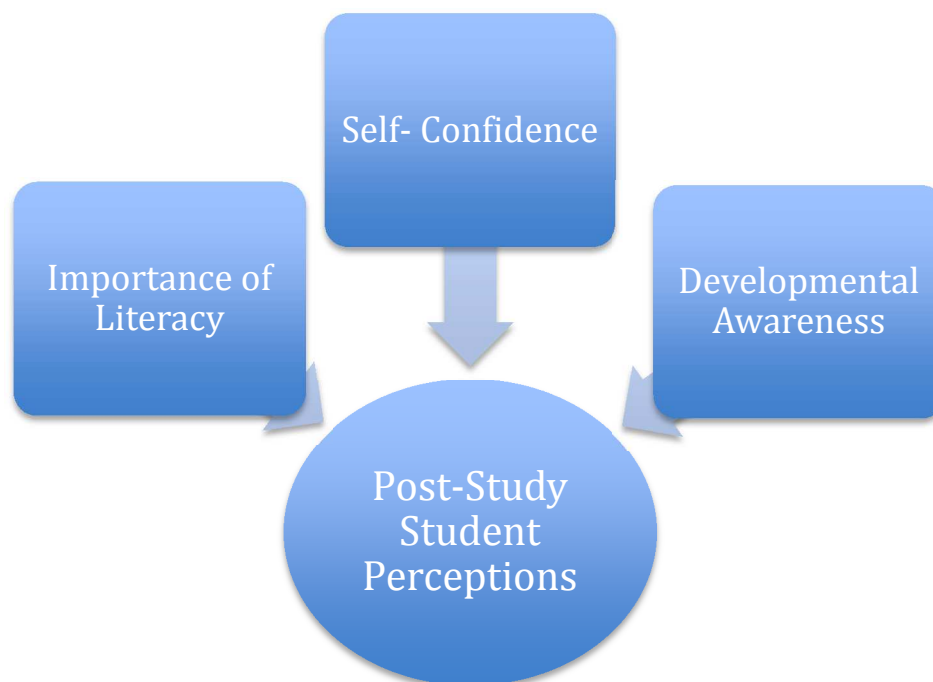


Figure 26. Student Post-interview Perceptions of Emergent Literacy

Post interviews. Post-interviews were conducted at the conclusion of the research. The same six students in the experimental and control groups that participated

in the pre-interviews also participated in the post-interviews. Similar to the pre-interviews, the post-interviews were conducted one-on-one in a quiet area. The transcription and coding procedures were the same as the pre-interviews, allowing for comparison and contrast observations between the pre and post responses. The post-interview responses fell into three broad categories concerning shifts in student's perception of reading and writing.

Expectations. Pre-k students grew in their awareness of both the educational implications of learning to read and write, and also the importance of writing for communicative purposes. Students seemed proud of their accomplishments with reading progress and understanding the importance of attending school. When asked what she liked best about reading, one student stated, "I can go to kindergarten". Another child responded that "going to pre-k" is how people learn to read and write. Other students understood the need for literacy in order to communicate. One student explained, "you need to write words like "daddy" and "home", and another student shared, "you have to be a good writer, and you have to write phone numbers".

Self-Confidence. Some students stated that they could read "all by themselves". Some students expressed an improvement in self-confidence with reading, because now "they could write books and then read their writing to their family". Both groups made fewer references to their parents teaching them to write, but the comments of parents teaching them to read were about the same number in the pre- and post-interviews. Students in both groups discussed literacy expectations with comments like, "You have to write everything", and "I need to write words like home and daddy". Some

also discussed the importance of working to acquire literacy by stating, “Keep trying to read, just keep trying”, and “Let your mom read to you, and then you read”.

Developmental Awareness. Students in both groups perceived reading and writing acquisition as a learned skill, and understood that school is the place to teach them. There was an underlying theme of student understanding that they were developing readers and writers through stages of a process. One student stated that he was “almost good (at writing) but didn’t know how to speak a story yet”. Students referred to drawing as a beginning stage of writing, just as many researchers have found. Scribbles were also referred to by one student, which is the next developmental stage of writing after drawing (Rowe, 2013). Students mentioned needing the teacher’s guidance (More Knowledgeable Other) for learning to write with comments such as, “Writing by yourself is hard” and “The teacher teaches me how to write on the board”. They mentioned using specific tools for writing such as pencils, markers, crayons, and paper. They also noted opportunities for writing would increase their skills, with comments like “practicing” is the best thing about writing.

Overall, there were no differences from pre- to post-study between the experimental group and the control group according to student interviews. Student interview responses were generally the same before and after the study students in regards to understandings of reading and writing acquisition. Student concepts of literacy seemed to be influenced by home experiences, family member reading practices, and favorite book topics or characters. After the study students expressed awareness with writing acquisition; the progression of writing stages involved; and, the need for teacher scaffolding, modeling, and writing tools. They tended to associate reading with writing,

but perceived writing as easier to attain than reading. One student summarized, “No, I am not a good reader, but my teacher is”. Another student stated, “Yes, I am a good writer. The teacher teaches me how to write on the board and do graphics practice”.

The analysis showed a change in the conceptual understanding from the pre to post interview for both groups, creating a slight contrast between reading and writing knowledge with regards to three main literacy concepts. There were similar findings on the pre-interview responses and post-interview responses with the control group and experimental group, with regards to the three mentioned categories of influences, motivation, and development. Similarly, both groups expanded their conceptual understanding of the developmental process and stages of writing, expectations for reading and writing, and an expressed confidence as writers.

Teacher interviews. Each of the nine teachers were interviewed at the beginning of the research using a protocol of seven questions to elicit beliefs and practices pertaining to student reading and writing opportunities and personal experiences with literacy. Interviews were recorded, transcribed, and analyzed. A coding system was used to record significant statements and highlight repeating ideas and themes, organizing them by interview question. Following this open code, categories were formed and grouped into smaller codes. The final coding resulted in eight categories of responses. Teacher interview findings revealed perceptions of student writing literacy acquisition; classroom instructional practices in the school setting; teachers’ personal beliefs and experiences with writing; and their perceptions of home and parental influences on student acquisition of writing. Results of the teacher interviews are summarized in Table 15.

Table 15

Teacher Perceptions of Student Literacy Influences and Practices

Writing is very important for young learners.

1. Students should be provided many opportunities to write daily during the day.
2. Reading and Writing are connected.
3. Written words communicate verbal message.

Student writing progresses through developmental stages.

1. Scribble marks are pre-writing expressions and should be valued.
2. Young student's abilities are on different levels.
3. Students perceive drawing as writing.

Parents do not value writing as much as reading.

1. Students do not have fine motor skills (no experiences at home).
2. Many students aren't able to write their own name.
3. Parents don't know how to help their own children.

Teachers value and emphasize writing more than in the past.

1. Teacher knowledge and value of writing has increased.
2. Curriculum embeds writing throughout the day focusing on individual writing.
3. Individual writing instruction should happen daily.

Teachers try to connect student writing to home practice.

1. Class books are sent home to read with parents.
2. Students author books and take books home to share with family.

Teachers motivate students to write.

1. Students are allowed to write for authentic reasons and about areas of interest.
2. Students share writing with peers and read writing to peers.
3. Teacher modeling reading and encourage students to write.

Scaffolding

1. Scaffolding facilitates writing (hand over hand, self-talk while drawing picture)
2. Teachers scaffold by modeling, assessing and giving feedback.
3. Students have individual needs, depending on current stage and level.
4. Teachers use tools such as the writing chart with play plan to scaffold.

Teachers have positive emotional memories of childhood experiences of learning to read and write.

1. Played school at home and read with family member or grandparent.
 2. Family members took them to library to read.
 3. Family member taught how to hold a pencil and modeled authentic writing.
 4. Given writing tools (pencils, crayons, coloring books, desk, and chalk).
-

Importance of writing. Teacher responses acknowledged an awareness of the importance of providing instructional writing practices at school to facilitate reading acquisition. One teacher expressed her belief about writing in her statement, “I think writing is really a huge foundation for everything else. I was telling parents earlier today that we write everyday, all day. There is always something that we are doing which involves writing, and that writing is such a huge part of our curriculum and part of our day. It is very important.” Another teacher expressed, “this knowledge has made us better teachers because we know more and we value that now. We write more in pre-k now because we know students can.”

Developmental stages. Teacher statements reflected an increased knowledge of writing acquisition involving stages of progression. Teachers and students recognized that writing develops according to developmental stages. One teacher stated, “scribbles have meaning and purpose from simple to advanced writing. Representations of child writing show stages of writing.” Teachers also noted the need for adult scaffolding and providing students with tools for writing.

Parental value of writing. Teacher responses revealed their perception that parents do not value writing as much as reading. The teachers tended to view writing as instrumental in teaching students to read, and themselves as the main provider for student literacy acquisition. One teacher explained her thinking, “one girl in my room has a weak grasp on her marker, so I talked to the parent (about writing) at home. The mom said that she works and doesn’t have time”. Another teacher expressed her views, “Every year, less students are able to write their name. This is a change from the past. Students used to

have more confidence with writing utensils. We (teachers) let students use tools and have experiences with writing. There are reasons why students don't write at home."

Increased instructional writing practices. In contrast, teachers value and emphasize writing more than in the past. One teacher discussed how extensively writing was embedded into the daily curriculum in this way, "Students write in their journals in the morning and we scaffold their writing. Students also have writing lessons, tracing names, writing names, Brigrance shapes, Graphics practices, center writing tubs, free choice and center writing time, in addition to small group writing and writing on the IPAD app with the stylus." Teachers now write daily in pre-k and embed writing throughout curriculum.

School to home connections. Teachers try to connect student writing to home practice. Some teachers encourage students to author their own books and then take them home to families. "I use the authors' chair for them to share their writing and their pictures. I also encourage students to share their writing with peers, to take home their books, and to share with families."

Writing motivation. Teacher comments connected writing to the constructivist view of learning by providing opportunities to write socially, through the daily play planning activity, and by providing writing throughout the day. Teachers felt that they used encouragement and student book-making to motivate students to write. One teacher reflected, "We make writing fun and personal at school. Students draw and build on friend's writing. This is a motivational hook for students."

Scaffolding. Teachers shared their views of modeling writing, "When I'm writing something, you can see that students are putting more body parts on their pictures

when they're drawing. Students want to write the lines at the bottom. You can see that they're trying to model more of what I do.” Another teacher discussed the tools curriculum developmental trajectory, stating, “We give each one individual time, introducing them to the sound map and voice to line matching. Whatever stage they are in, we teach them how to work and how to hold the pencil. We also do small group activities, modeling individually, and try to give one-to-one scaffolding”. Another teacher shared, “With our curriculum, we have the different levels of writing that we scaffold, as far as their plans and their message, their lines, initial sounds, middle sounds, ending sounds. We look at where they are, and then we take them where they need to go.”

Teacher childhood writing experiences. Teachers have positive emotional memories of childhood experiences of learning to read and write. “I had two older sisters and a mom that I’m sure helped me a lot or that I tried to mimic.” One teacher fondly remembered writing with her grandmother. “My grandmother played school. She gave me a big roll of paper and a little desk. I would write on the paper. They always allowed and encouraged me to write.”

When compared to student interview findings, there were a few similarities that demonstrated teacher influence on student literacy beliefs. Some students commented on the use of tools for writing, developmental stages, and teacher modeling. Other students talked about the importance of learning to write for success in kindergarten, which is the message that teachers emphasize when teaching writing.

The teacher interviews helped to explain their beliefs and attitudes toward emergent reading and writing. These particular teachers held high beliefs that writing facilitated reading skills, as they followed the district curriculum that involved daily

writing scaffolding. “We use a sound map to emphasize the phonemic sounds, and if they (students) are hearing the sounds and seeing the letters, then they are able to transcribe those as their learning develops. Then, their scribbles start to turn into pictures and the pictures start to turn into words.” Teachers also embedded writing throughout the day in most every activity. As one teacher shared, “Definitely the play planning is such a good way of scaffolding and taking them one step farther with their writing. The developmental trajectory is good because it shows the stages and pictures. Together we look at student writing and individualize them more.” Another teacher stated, “The current curriculum embeds writing. That is why we see so much growth in writing because students are exposed to it over and over again. They pick up on it and they can grow as far as they can grow.”

One teacher observed that the students in her intervention group were more comfortable and eager to write during the day than students in her control group. “I noticed in our intervention group in the beginning there were several students that didn’t even want to write, and I had to do hand over hand to get them to do it (write). Now they are just dying for a turn, because I am like ‘I am gong to do the capital letter’, and they say, ‘No I want to do the capital and period’”. Some teachers also found that students in the experimental group wrote more during free center time and also asked for more writing opportunities during the day, and were generally more motivated to write. “They are just fighting over who gets to do it (write). They get so excited. It is neat to see how quick that has come.”

Most pre-k teachers stated in their interview that students had many opportunities to write throughout the day. The district curriculum contains specific

writing activities designed to scaffold student learning of early reading skills and knowledge of writing.

Writing samples. Student writing samples were collected and coded for writing achievement data in order to support the question, does the qualitative data support the quantitative data? Writing was a part of each child's daily routine. All students in the pre-k classroom participated in the play plan activity, which consisted of name writing, a self-portrait drawing, and sentence writing. Daily writing samples were assessed by the scaffolded writing developmental/learning trajectories. A sample play plan was collected from each student at the beginning of the school year and again at the end of the study.

Eight levels of writing achievement. The Scaffolded Writing developmental/learning trajectories rubric (Badrova et al., 2009-2011) was used to assess student's writing progression and to indicate the current writing level of the student. These descriptive levels range from formulating a plan (PL) to alphabetic principle (AP). The following samples represent typical learners, English language learners, and students with disabilities from both the control and experimental groups. A total of six students' writing samples are compared and discussed according to the three groups of learners. There are two typical learner samples from both the experimental and control group. There are two ELL student writing samples, representing one student in the ELL experimental group and one student in the ELL control group. There are two SWD student writing samples from both the experimental and control groups. Student writing samples from each of the three categories were chosen to qualitatively represent the

changes in the student's writing and to illustrate growth with students in both the experimental and control groups. Each sample will be discussed separately.

Typical learner in control group. The side-by-side writing samples in figure 27 illustrate a typical learner in the control group and the different writing levels in September and December. The September sample indicates the student is writing at the picture level. The child's play plan shows letters representative of a name and a basic self-portrait including a head with eyes and a mouth. The body has arms and legs. The child verbalized a plan and attempted to write a message as indicated by the scribbles and letters at the bottom of the page. In December, this same student moved up one level to the message level and wrote all the letters in her name. Her self-portrait included more details such as hair, feet, and hands. She verbalized her message, "I am going to be the customer" and drew lines to represent each word. Figure 27 illustrates the writing samples of a typical learner in the control group.



Figure 27. Typical Learner in Control Group

Typical learner in the experimental group. The side-by-side writing samples in figure 28 illustrate a typical learner in the experimental group and her different writing levels on August 28 and December 18. The August sample illustrates the student writing at the picture level. The play plan shows no attempt of name writing but does show a basic self-portrait including a head with eyes, mouth, nose and hair. The body has arms and legs. The picture also has a prop representative of her plan. The child verbalized a plan but did not attempt to write a message. In December, this same student moved up five levels to writing medial sounds, wrote all the letters in her name, and included feet in the self-portrait. She verbalized her message, “I am going to make ice cream” and drew lines to represent each word in her message. She used inventive spelling to write most beginning, middle, and ending sounds. Figure 28 illustrates the writing sample of a typical learner in the experimental group.

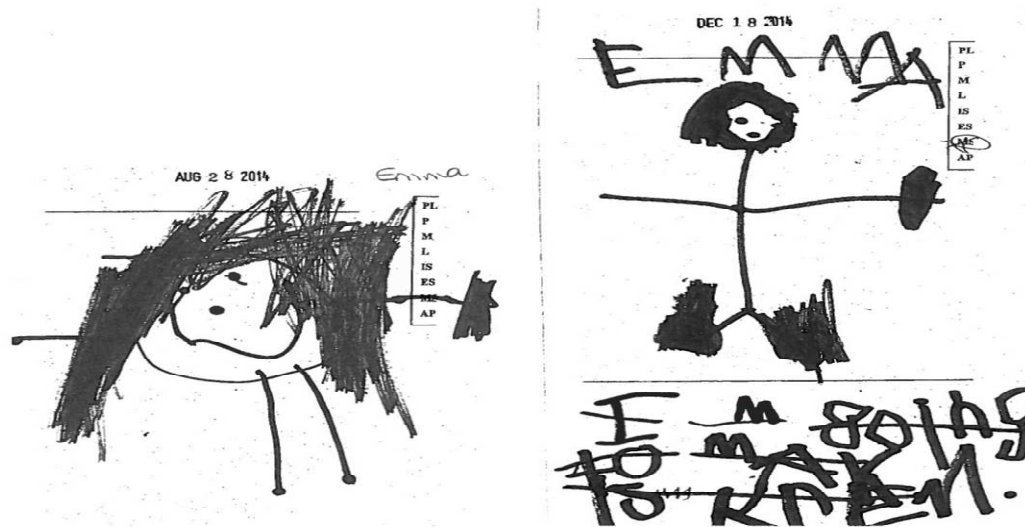


Figure 28. Typical Learner in Experimental Group

ELL student in control group. The side-by-side writing samples in figure 29 illustrate an ELL student in the control group and her writing levels on September 2 and December 16. The September sample illustrates the student writing at the plan level. The play plan shows name writing and a basic self-portrait including eyes, nose, and a mouth. The body has legs. The self-portrait has no prop for a plan. The child verbalized a plan and attempted to draw a line at the bottom of the page. In December, this same student moved up three levels to the lines level. She wrote all the letters in her name, and included more details in the self-portrait with a prop. She verbalized her message, “I am going to be the wrapper” and drew lines to represent each word. Figure 29 illustrates the writing sample of an ELL student in the control group.

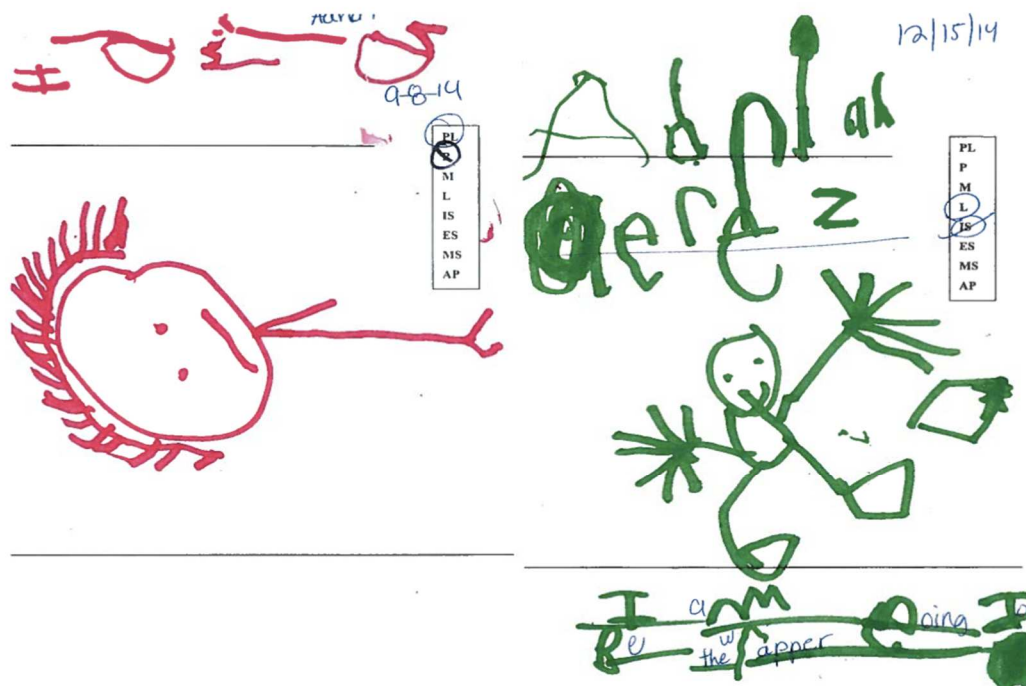


Figure 29. ELL Student in Control Group

ELL student in experimental group. The side-by-side writing samples in figure 30 illustrate an ELL student in the experimental group and her writing levels on September 8 and December 15. The September sample shows the student writing at the plan level. The play plan shows name writing and a basic self-portrait including eyes, mouth, and hair. The body has fingers and feet. The self-portrait has no prop for a plan. In December, this same student moved up five levels to the ending sounds level. She wrote all the letters in her entire name, and included more detail in the self-portrait. She verbalized her message, “I am going to be the cashier” and drew lines to represent each word. Figure 30 illustrates the writing sample of an ELL student in the experimental group.

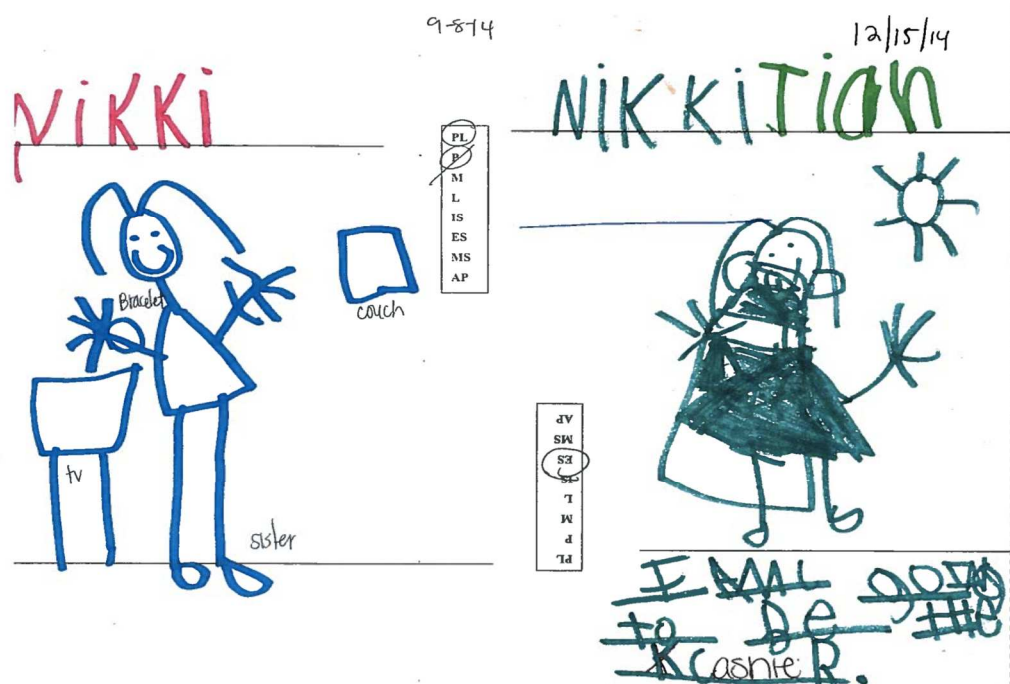


Figure 30. ELL Student in Experimental Group

SWD student in control group. The side-by-side writing samples in figure 31 illustrate a SWD student in the control group and his writing levels on September 8 and December 15. The September sample illustrates the student writing at the picture level. The play plan shows name writing and a basic self-portrait with a car, which represents the prop for a plan. The child verbalized his plan to play. In December, this same student moved up two levels to the lines level. He wrote his entire name and verbalized his message, "I am going to be a writer". He drew lines to represent each word and most initial sounds. Figure 31 illustrates the writing samples of an ELL student in the control group.

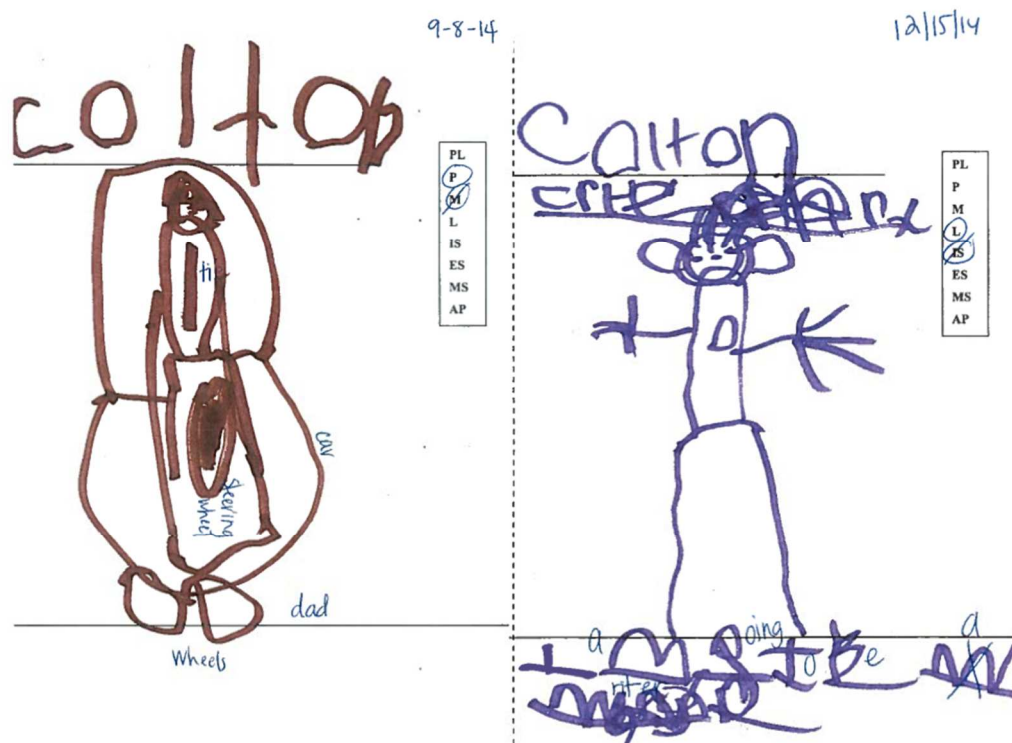


Figure 31. SWD Student in Control Group

SWD student in experimental group. The side-by-side writing samples in figure 32 illustrate a SWD student in the experimental group and her writing levels on September 8 and December 15. The September sample shows the student writing at the plan level. The play plan shows representation of a name with mostly correct letters. The self-portrait has no prop for a plan. The child verbalized a plan but drew no lines. In December, this same student moved up four levels to the initial sounds level. She wrote all the letters in her entire name, and included more details in the self-portrait with a prop. She verbalized her message, “I am going to be the cashier” and drew lines to represent each word. She wrote all initial sounds and most ending sounds. Figure 32 illustrates the writing samples of an SWD student in the experimental group.

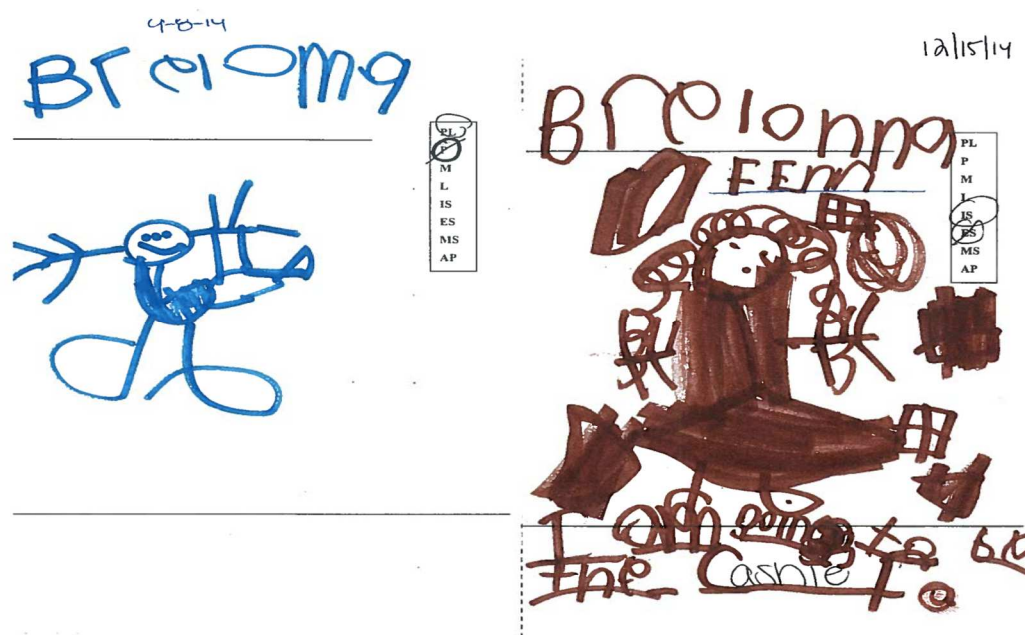


Figure 32. SWD Student in Experimental Group

The writing samples of the six students illustrate the different levels of play planning and stages that are in the writing progression. Each of the students in both the control and experimental groups demonstrated writing growth from August to December. These random samples taken from one classroom visualize literacy growth of phonemic awareness and print knowledge for students in the experimental group and students in the control group. The samples show student growth based on the progression of levels according to the developmental trajectory rubric. These examples indicate that ELL, SWD, and typical learners in both the experimental and control groups showed growth with writing initial letters of words. Although the standardized writing measure did not show writing growth significance for students in the intervention, these writing samples illustrate that students made improvement with print awareness and phonics skills as illustrated by writing the initial and ending sounds of words, showing growth in a different way. These smaller changes may not have been captured in the reading measures administered in this study.

CHAPTER V

Discussion

This research was conducted to demonstrate how scaffolding pre-k students' early writing skills through the interactive reading and writing intervention impacted reading and writing outcomes for young children. The study also studied English language learners and students with disabilities in addition to typical learners to determine if the interactive reading and writing intervention improved literacy outcomes across these types of learners. The final chapter of the dissertation restates the research problem and reviews the major methods used in the research. The major sections of this chapter present a summary of the study and important conclusions drawn from the data presented in Chapter 4. It also provides a discussion of the limitations, implications for action and recommendations for further research in the area of emergent literacy.

Writing Outcomes for Typical Learners

Students who received the interactive writing and reading component in addition to scaffolded writing did not make more progress on writing outcomes as assessed by a standardized measure than students who did not receive the intervention. Although the differences between the intervention and control groups did not reach statistical significance, the differences were approaching significance, and the moderate effect size indicated that there were differences that may be practically useful in an education setting according to the guidelines of the What Works Clearinghouse.

Although no significant effects were found on the TEWL-3, students receiving the interactive writing intervention improved more on print knowledge on the Clay's Observation Survey than the students who only received scaffolded writing. The

students in the intervention were better at identifying more writing elements (e.g., individual letters in a word, words in a sentence) than those who did not participate in the intervention. Students in the intervention group also understood print concepts of directionality and print features better than students in the control group. The writing samples of students in both the intervention and control groups showed writing growth from August to September.

Although the TEWL-3 standardized assessment did not show significant difference, the teachers and research assistants observed differences in the intervention group regarding writing achievement. Teachers noticed that students in the interactive reading and writing intervention were generally more comfortable with writing in front of peers while students not in the intervention were commonly reluctant to attempt to write letters or words and often just stated that they didn't know how to write. Teachers also found that students in the experimental group wrote more during free center time and also asked for more writing opportunities during the day.

Results of the student pre and post-interviews reflected increased student awareness of several writing concepts for both groups. Students expressed that they recognized writing as a learning progression made up of developmental stages. Students recognized drawing and scribbling as beginning stages of writing. They also learned that teachers could teach them to write by modeling and that cultural tools are useful for writing. Student post-interviews correlated with teacher views of the importance of writing daily, the value of learning to write for entry into kindergarten, and print awareness concepts.

The interactive writing method has been shown to be most effective when it connects with other writing activities in the daily curriculum (McCarrier et al., 2000). For the current study, the interactive reading and writing intervention was combined with the existing writing curriculum, Tools of the Mind, which included writing opportunities throughout the day. The current research did not find TEWL writing outcomes significant. One reason for a lack of significance could be that the current curriculum embedded writing throughout daily activities. Both groups received ample opportunities and encouragement to write throughout the day. The Tools of the Mind play planning activity uses teacher one-on-one conferencing to scaffold students with writing letters, words, and sentences. This understanding could help explain the lack of significant findings on the standardized writing assessment that measures the student's ability to produce writing of words and sentences. All students are exposed to daily writing opportunities that require students to produce writing, which could be a contributing factor as to why the intervention did not show a difference between students in the experimental and control groups with this particular writing measure. An example was the play planning writing activity which all students received as part of their daily instructional routine. If the intervention had lasted over a year span instead of five months, writing outcomes could possibly have been significant. Another rationale for why students did not make gains could be the instructional delivery of the intervention. Most of the lesson was teacher reading and modeling, with not a lot of actual student engagement with writing. Students were mostly sitting and listening during the lesson. Even during the writing portion of the lesson, only one student wrote on the chart tablet

at a time while other students watched. More independent student practice may be needed to show writing growth.

Reading Outcomes for Typical Learners

The results from this study revealed that students who received the interactive writing and reading component in addition to scaffolded writing made more progress on reading skills of phonemic awareness and sound knowledge than students who did not receive interactive writing and reading treatment. There was a significant effect for phonemic awareness scores of prekindergarten students as indicated by the CPAA standardized reading assessment and a significant effect for sound knowledge as indicated by the COS informal reading assessment. Results were not significant for other reading skills including reading, phonics, and listening on the CPAA, nor was significance found on letter recognition on the COS. Reading outcomes were influenced by the focused emphasis placed on teacher scaffolding of phonemes during intervention lessons. The developmental progression of hearing sounds (phonemic awareness) first and then learning letter symbols (letter recognition) is aligned with the reading continuum of learning. During each intervention lesson, teachers scaffolded students to write words by first identifying the beginning sound of the word and then identifying the letter that corresponds with the sound.

This research contributes to the body of literacy research concerning emergent learners by quantitatively measuring reading with both standardized writing and reading assessments. Much research of emergent literacy uses only qualitative measures with young students. This experimental research on the interactive reading and writing instructional method suggests better learning outcomes for pre-k students in the

classroom setting. The interactive writing method has been studied with young kindergarten learners, often using Clay's Observation Survey measure and with some studies showing significance results. Button et al., (1996) studied 17 kindergarten students qualitatively and found 90% of students made gain in all measures of COS with the most growth in hearing sounds. The current research found similar results with COS, but not with letter recognition outcomes.

Both the standardized and informal reading measures in this study indicated that students increased in phonemic awareness skills with students. Student interviews indicated some students in the intervention group increased in their awareness of reading acquisition concepts. They viewed reading and writing as connected by letters, words, and sentences. Some students also expressed the awareness that they need to know many words to be able to read. Some students stated that they were not as confident with reading words as they were with writing words.

Student writing samples illustrated the growth with students in the experimental group on phonemic awareness and letter recognition. Student growth was demonstrated on the writing samples as scored by the developmental/learning trajectories. By December, many students were already writing initial sounds, with some students writing ending sounds. Drawing lines to represent a sentence and individual words also indicated student learning of print concepts. The reading results of the current study are particularly important because it appears that interactive reading and writing instruction supports children's development of phonemic awareness and print knowledge they will need for early reading.

Diverse Learners

There were no significant effects on two of the three measures for ELL students. ELL students in the interactive reading and writing did not perform better on the TEWL-3 writing measure or the CPAA reading measure, but did perform better on the phonemic awareness subtest of the COS. The finding of ELL students performing better on phonemic awareness is similar to the strong findings of the outcomes of the all learners who received the interactive reading and writing intervention with regard to phonemic awareness outcomes. ELL students are acquiring English as a second language as they are also acquiring emergent literacy skills. The interactive reading and writing intervention facilitated the ability to hear phonemes in words, which was appropriate in the development of student language learning.

Williams and Pilonieta (2007) demonstrated how the interactive writing approach has potential to build oral language while scaffolding literacy that may help support ELL students in acquiring phonemic awareness. Although there are some studies that have found interactive writing to be successful for typical learners of English (Button et al., 1996; Craig, 2006), there are few published studies pertaining to the use of interactive writing with pre-k ELL students (Williams & Pilonieta, 2012). The current study with pre-k students found interactive reading and writing to help both ELL students and all learners to make progress in acquiring phonemic awareness skills. The intervention included an oral reading component that may have assisted the ELL students with more opportunities to hear and produce language. This portion of the study was underpowered with a relatively small sample of ELL students. If a larger number of

students had participated in the research it is possible that significance would have been found with the ELL sample similar to the typical sample.

There were no significant differences for reading and writing on any of the three outcomes for students with disabilities: TEWL-3 had moderate effect sizes; CPAA had low effect sizes; and COS a moderate effect size for sound knowledge, but low effect sizes for letter recognition and print knowledge. The current research had a small sample size of SWD. If a larger number of students had participated in the research it is possible that significance could have been found with SWD students and phonemic awareness outcomes. Although the interactive reading and writing approach can provide authentic purposes for writing and scaffolding at the learner's developmental level, it may not provide other instructional practices needed for SWD participants. This writing approach may need to be adjusted to provide more time teaching the processes of writing and more individual scaffolding of skills with students struggling to learn foundational literacy.

Writing and reading outcomes for ELL and SWD participants did not indicate more growth with students in the experimental group than students in the control group; however, the student writing play plan samples showed that these students made improvement. The two ELL student writing samples showed the ELL control group student moved up three levels during the research study, while the ELL experimental group student moved up five levels. The SWD student writing samples showed the SWD control group student moved up two levels, while the SWD experimental group student moved up four levels. Writing growth was observed in smaller increments using the developmental/learning trajectories rubric.

Student Perceptions

Student interviews showed a general shift in conceptual understanding for students over the five-month study. Students seemed to expand their conceptual understanding of the developmental process and stages of writing, expectations for reading and writing, and an expressed confidence as writers. The student surveys showed change in student attitudes for the general population of students toward reading and writing.

Teacher Perceptions

Teacher interviews showed that teachers felt the school curriculum provided effective writing practices embedded throughout the school day. Curriculum components of daily writing practices provided individual scaffolding for students to move through developmental stages according to their instructional level. Some teachers observed that students in the experimental group were more eager than the students in the control group to participate in additional writing activities.

Overall, teachers held beliefs of student writing acquisition and classroom instructional practices that possibly influenced their own classroom literacy practices. Teachers also held strong personal beliefs about writing acquisition and reflected on their own childhood experiences with reading and writing. Teachers expressed that home environment and parental influences have an impact on student acquisition of writing.

Strengths and Limitations

One strength of the current research was the experimental pretest/posttest control-group design that manages major threats to validity. This design offers a guard to

internal validity by eliminating extraneous variables. Experimental research allows for testing and possibly providing evidence for basing a causal relationship between factors. The only way to consider whether something is an evidence-based practice is to test it using a comparison group. Another strength was the mixed-methods research design. Both quantitative and qualitative data were collected over the span of five months. Collecting both quantitative and qualitative data give a richer and deeper explanation to the findings and results of the research. An additional strength of the research was the large sample of participants within the actual school setting. This variety of participants provides for greater generalization to other pre-k populations.

One limitation was the length and timing of the research. To show results with writing assessments and young children, a yearlong study would be recommended to be able to see growth in writing skills. It would also be advantageous to allow young pre-kindergarten students to have time to transition into school routines before beginning assessments. Allowing students to have several weeks adjustment time in school before beginning the assessments could benefit by giving more accurate assessment results.

An additional limitation was the number of participants in the subgroup categories. This research had small sample sizes for ELL students and SWD students, which could explain why no significance was found with SWD subgroup on any measure and ELL students only showed effects with phonemic awareness. A yearlong study would allow ELL students more time to acquire more language skills while they are acquiring reading and writing skills. This longer time period could also give SWD more time to practice new skills that could result in distinguishable differences at posttest.

Additionally, another element of writing could be added to the interactive reading and writing intervention. Adding more components requiring writing participation may help students to be more engaged throughout the lessons. For example, each student could have their own whiteboard and marker to write letters and words during the lesson simultaneously with the teacher and the one student who share the pen. Other suggestions for adding more student engagement during writing instruction could be adding a peer support component. Harris et al. (2006) found that adding the peer assistance model was effective in supporting student learning. Peers can assist by identifying writing strategies and having writing discussions with a peer. This strategy could be used during a follow-up journal writing time allowing students to work in with a partner.

Implications for Practice and Future Research

When replicating this research it would be advisable to use predictable literature that is also sociocultural in nature with strategic pacing and timing. The chosen literature was motivating for the diverse population of students in the program; however, the length of the books was challenging at the beginning of the study for four-year-olds to build listening stamina. Selected literature of predictable books and rhyming books could be shorter in context at the beginning of the study and then build in length as the study progresses, and also be motivating to students. Short predictable books would allow more time to focus on student writing and less time spent listening to stories. Teachers could also use a strategy for engaging all students during the writing segment to activate more learning for individual students. Air writing or tracking the letters on the floor while one student writes would increase student participation. A final suggestion would be to have

the 20-minute share the pen lesson and a follow up writing activity such as journaling later in the day.

The current research began in August, directly after enrollment for pre-k students. It would be advisable to begin the research for pre-k four-year-old students in the second nine-weeks of school after acclimation to school structure and routines. A yearlong study is advisable in order to see significance results with young students and growth over time. Standardized writing measures are difficult to find that are developmentally appropriate for the age and also age-sensitive enough to measure small increments of improvement.

The interactive reading and writing approach aligns with the constructivist perspective as young learners constructing meaning of words and write for authentic purposes (Vukelich & Christie, 2004). This approach keeps learners socially engaged, allowing them to be actively involved in creating text in a developmentally appropriate way. The significance of this study is that findings suggest the interactive reading and writing intervention is an effective literacy instructional practice for emergent learners. The data suggests that the interactive approach to literacy expedites learning of early literacy skills of phonemic awareness and student understanding of print knowledge. Phonemic awareness and sound knowledge skills are developmentally aligned with beginning skills of an emergent learner. Students who are immersed with reading and language will first develop the phonemic awareness before phonics, especially with teacher scaffolding their instruction. Print knowledge instruction was build into every lesson so students were continuously exposed to print concepts while reading literature. The majority of students in this study sample were students of low socioeconomic status.

This suggests that the approach is also effective with young children of poverty, who can often struggle in acquiring literacy skills. The exposure to book read alouds and interaction with print may have not been part of their home environmental practices, so the daily exposure facilitated student learning of hearing phonemes in words. Findings also suggest that the interactive reading and writing approach is effective with English language learners in acquiring sound knowledge. Again, the daily concentration on reading and scaffolding aided their growth with hearing phonemes in the English language. The research area pertaining to effective literacy strategies for young ELL students is even less researched. This study contributes to current research with a classroom instructional practice to help facilitate sound knowledge with ELLs.

In conclusion, the addition of interactive reading and writing lessons can add benefit to scaffolded writing lesson in developing phonemic awareness, sound knowledge, and print knowledge. This design was used to accommodate the unique age of the student and yet consider the whole child perspective. Most published studies with four-year-olds have used qualitative measures or informal measures, but not standardized reading or writing measures. This study adds to the field of literacy research in the area of early childhood and writing instruction, an area that has a limited amount of research. This study also contributes to the body of research with instructional writing practices that can be used in the classroom to teach early literacy skills.

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APPENDICES

APPENDIX A

Writing Frameworks/ Stages of Emergent Learners by Author

Gentry & Gillett (1993) Stages of Spelling Development	Rowe (2013) Writing Trajectories	Cabell, et al., (2013) Developmental Levels of Writing	Bodrova and Leong (2011) Developmental Learning Trajectories	Trehearne (2011) Writing Levels
Precommunicative Stage (scribbles, circles, lines, and a few letters)	Drawing Scribble	Drawing and Scribbling	Plan for drawing & writing Picture drawing	Drawing as writing Scribble writing
Semiphonetic Stage (words represented by a letters or two-understanding letter-sound relationship)	Stroke units	Letters and letter-like forms	Copying message	Letter units or forms
	Personal Curve	Salient and beginning sounds	Child draws lines to represent words	Nonphonetic letter strings (random letters),
	Pictographic		Writes initial sounds of words	Copying from environmental print
Phonetic Stage (most consonants and vowels are represented by some letters)	Personal manuscript	Beginning and Ending Sounds	Writes ending sounds of words	
	Random letters		Writes middle sounds of words	
Transitional Stage (all sounds represented by letters)	Name letters			
	Well-learned units, familiar sequence			
Transitional Stage (all sounds represented by letters)	Invented spelling/letter name strategy		Alphabetic principle	Invented spelling
	Invented spelling/ syllables			
Conventional Stage	Invented spelling/ most phonemes		Word patterns	
	Conventional spelling		Conventional spelling	Conventional writing

APPENDIX B

Scope, Sequence and Objectives of the Interactive Reading and Writing Intervention

Instructional Domain: Reading Literature		
Literacy Concepts	Objectives	Sample Print Reference
Listening Comprehension	With modeling and support, ask and answer (respond to) questions about text read aloud.	Who are the characters in the story? What happened first in the story? Next? Last?
Listening Comprehension/Self-Relevance	With guidance and support, relate informational text to personal experience.	Can you tell us about a time this happened to you?
Instructional Domain 2: Print Awareness/Concepts		
Print Knowledge	Demonstrate understanding of basic features of print (page order, cover, author, title).	I will read this page first and then this page next. This title of the book tells us the name of the book.
Print Directionality	Handle books respectfully and appropriately. Turn pages one at a time, front to back, left-to-right.	How should we hold the book when we read? What do we do when we finish reading one page?
Print Function	Recognize spoken words can be written and read.	How many words are in our sentence?
Print Knowledge	Understand that words are made up of alphabet letters that have individual names.	Can you find the letter on our alphabet chart that we need to write?
Letter Recognition	Recognize frequently occurring uppercase letters and some frequently occurring lowercase letters.	Can you point to a letter on the page? Can you point to an uppercase and lowercase letter?
Concept of a word and sentence	Demonstrate increasing understanding of spoken words: words are units of spoken language/sentences.	How many words do you hear in this sentence?

Scope, Sequence and Objectives of the Interactive Reading and Writing Intervention
(continued)

Syllabication	Demonstrate increasing understanding of syllables; syllables are units of spoken language/words.	Look at this word in the sentence? How many syllables do you hear?
Phonemic Awareness	Demonstrate increasing understanding of sound, and awareness that sounds make up spoken words.	Can you say the word _____? What sounds do you hear in that word?
Initial Sound /Ending Sound Recognition	Read and emphasize beginning sounds in words, then ending sounds in words.	What is the first sound you hear in this word?
Rhyming	Recognize and discriminate rhyming words in spoken language.	Finish the sentence with me with a word that rhymes.
Syllabication	Participate in oral activities to introduce counting syllables in words/ words in sentences.	How many syllables do you hear in the word? How many words do you hear in this sentence?

Instructional Domain 4: Alphabet Letter Knowledge

Letter Distinction	Understand that letters come in two forms: upper and lowercase.	This M is an uppercase letter. Uppercase letters are bigger than lowercase letters.
Metalinguistic Letter Concept	Understand that letters are a symbol used in written language.	Words are made up of letters. Let's use the pointer to point to a letter.
Letter Recognition	Recognize frequently occurring uppercase letters.	Use the pointer to point to an uppercase letter.
Letter Recognition	Recognize some of the most frequently occurring lowercase letters.	Find a lowercase letter in the word and point to it.
Name Recognition	Recognize letters in own name.	Find a letter that is in your own name.

Scope, Sequence and Objectives of the Interactive Reading and Writing Intervention
(continued)

Instructional Domain 5: Phonics and Word Recognition

Word Identification	Demonstrate word awareness by identifying familiar words in books. Understand that letters in words make sounds.	Use your pointer and point to any words that you know.
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Instructional Domain 6: Writing

Letter/Sound Correspondence	Demonstrate developing basic knowledge of letter-sound correspondence association. Match the name and initial sound of some consonant letters.	Say the word slowly. What sounds do you hear? Write the letter that stands for that sound. Say the word and see if we recognize any other sounds.
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Instructional Domain 6: Writing

Writing: Opinion	With modeling and support, use a combination of drawing, dictating, and emergent writing to express a preference, opinion or idea.	Draw a picture (or words and a picture) to show what you think about the story.
Writing: Expository	With modeling and support, use drawing, dictating, and letters to explain information about a familiar topic or text.	Draw and/or write words to explain how the characters feel.
Writing: Narrative	With scaffolding, use drawing, dictating, and emergent writing to tell a story with order of events.	Draw and/or write words to tell about the story.
Name Writing	Write letters in own name.	How many letters in your name can you write?

Instructional Domain 7: Speaking and Listening

Speaking Complete Sentences	Through adult scaffolding, use complete sentences to express a thought or idea.	Tell us about a part of the story that you enjoyed.
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Scope, Sequence and Objectives of the Interactive Reading and Writing Intervention
(continued)

Instructional Domain 8: Language

Vocabulary	With modeling and support, use frequently occurring vocabulary words.	What word could you use to describe that idea?
Writing words	With modeling and support, print some upper and lowercase letters.	We can use letters to write a word. Write the letter X.
Reading	With scaffolding and feedback from adults, participate in shared language activities and use vocabulary.	Use the pointer to point to words and read what we have written so far.
Capitalization & Punctuation	Use some letters to represent ideas and inconsistently use conventions of standard capitalization and punctuation.	We begin sentences by writing a capital letter. We end sentences with a period.
Uppercase & Lowercase Letters	Show awareness of the difference between upper and lowercase letters.	Point to an upper case letter in the word/sentence. Point to a lowercase letter.

Instructional Domain 9: Social Emotional

Self-Relevance	Describe self-using several different identifying characteristics and qualities.	What words would you use to describe the characters or place in this book?
Self-Relevance	Develop a basic awareness of self as an individual, self within the context of family and community.	What can we write about how the characters feel in this story? How would you feel if you were this person?

APPENDIX C

Title of Storybooks and Concept Targets

	<i>Rap a Tap Tap: Here's Bojangles—Think of That!</i> Dorros, A. (2008)	Listening Comprehension (PL.PK.1) Print knowledge- Demonstrate understanding of basic features of print (pate order, cover, author, title) (RI.PK.5) Rhyming (RF.PK.5) Name recognition (PF.PK.3c)
1	<i>Papa and Me.</i> Dillon, D., & Dillon, L. (2002)	Print Directionality (RF.PK.1a) Phonemic Awareness (RF.PK.3a) Listening Comprehension (RI.PK.3) Speaking Compete Sentences/Writing Sentences (L.PK.1; W.PK.1)
2	<i>Grandmother and I.</i> Buckley, H. & Ormerod, J. (2000)	Phonological Awareness (RF.PK.2) Listening Comprehension (PL.PK.2) Print Knowledge (RI.PK.5; RI.PK.7) Speaking and Writing Sentences (SLPK.6a)
3	<i>The Chick and the Duckling.</i> Ginsberg, M. (1988)	Print Function (RF.PK.1b) Print Knowledge (RF.PK.1b) Metalinguistic Letter Concept (RF.PK.2) Listening Comprehension (RI.PK.10)
4	<i>Mary Wore Her Red Dress.</i> Peek, M. (2013)	Sound Recognition (RF.PK.2) Name Recognition (RF.PK.3c) Print Knowledge (RF.PK.4) Print Concepts (RF.PK.1c)
5	<i>Bippity Bop Barbershop.</i> Tarpley, N. A. (2002)	Sound and Letter Recognition (RF.PK.3a) Listening Comprehension (RL.PK.2) Print Knowledge (RF.PK.4) Letter/Sound Correspondence (RF.PK.1c)
6	<i>Faraway Home.</i> Kurtz, J. (2000)	Reading Literature (RF.PK.1) Language: Vocabulary (L.PK.4) Phonemic Awareness (RF.PK.3a) Fluency (RF.PK.4)
7	<i>The Three Bears.</i> Galdone, P. (1985)	Word Recognition (RF.PK.3) Phonological Awareness (RF.PK.2d) Print Concepts (RF.PK.1a) Phonological Awareness (PF.PK.2e)

 Title of Storybooks and Concept Targets (continued)

8	<i>The Trip Back Home.</i> Wong, J. S. (2000)	Word Recognition (RF.PK.3) Phonological Awareness (L.PK.2d) Print Concepts (RF.PK.1b) Concept of a word/sentence (RF.PK.2)
9	<i>Momma, Where Are You From?</i> Bradby, M. (2000)	Word Recognition (RF.PK.3) Phonological Awareness (L.PK.2d) Print Concepts (RF.PK.1c) Conventions of Standard English (L.PK.2)
10	<i>Grandpa's Face.</i> Greenfield, E. (2014)	Word Recognition (RF.PK.3) Phonological Awareness (L.PK.2d) Print Concepts (RF.PK.1b) Concept of a word/sentence (RF.PK.2)
11	<i>Beautiful Blackbird.</i> Bryan, A. (2003)	Word Recognition (RF.PK.3) Print Concepts (RF.PK.1) Phonological Awareness (RF.PK.3) Phonics/Word Recognition (RF.PK.3)
12	<i>Jingle Dancer.</i> Smith, C. L. (2000)	Print Concepts (RF.PK.1d) Word Recognition (RF.PK.3) Print Knowledge (RF.PK.4) Concept of a word/sentence (RF.PK.2) Conventions of Standard English (L.PK.2)
13	<i>Do You Want To Be My Friend?</i> Carl, E. (1998)	Word Recognition (RF.PK.3) Print Concepts (RF.PK.1) Phonological Awareness (RF.PK.3) Phonics/Word Recognition (RF.PK.3)

APPENDIX D

Interactive Reading and Writing Lesson Sessions

Rationale. The teacher and children create a text together for a particular purpose and audience. The teacher writes most of the text, but carefully chooses several places to invite students to “share the pen” (at first, have them write a letter or a part of their name, for example). The written text can be read over and over.

Read. Plan your instruction, and place sticky notes at places with in the text reminding you to stop and demonstrate responding to the text, or invite the children to share their thinking.

Read the text.

Invite the children’s responses to your comments or questions about the text or illustrations. Consider having them turn and talk in pairs about questions you pose.

Discuss the text with the children so it becomes memorable.

Teach. The teacher talks with the children about an experience, thereby grounding the writing experience. The richness of the written text develops from the richness of the talk.

Use the conversation to guide the writing.

Write. The teacher writes one word at a time, repeating the whole sentence and adding each word so the children learn language structure. Invite a child to write a letter (or her or his name) at selected points as appropriate. The alphabet chart can be used as a model for writing letters. In some cases the teacher may want to guide the child’s hand.

Reread. Reread the newly constructed text when completed.

Link.

Remind children about what they know how to do (e.g. write the first letter of their name, say a word slowly) and ask them to use this knowledge when they write independently.

Expand. Provide more rich opportunities for students to write with real purpose. Post the writing on the wall for students to revisit and read at other times during the day.

APPENDIX E

Intervention Fidelity Checklist

Rate the interventionist by placing a corresponding number in each box for each item

1 = yes 2 = no

Interventionist Name: _____

Date of Intervention: _____

Start Time: _____

Ending Time: _____

Does the interventionist display the following attributes during the session?

- a. Establish the purpose for learning (example: I can statement)
 - b. Teacher discusses title, author, front of book, etc.
 - c. Teacher read children's literature book and relates to student experiences (self-efficacy)
 - d. Teacher discusses print concepts (directionality, capitalization, punctuation, etc.) while reading text
 - e. Common text is composed by teacher and students (all students have opportunity to hold the writing instrument to write some letters)
 - f. Teacher scaffolds student writing through use of conversation to support the process and to make letter-sound connections by hearing sounds in words and connecting with letters (questioning and discussion)
 - g. Teacher explicitly teaches literacy concepts
 - h. Text is reread by teacher and students
 - i. Learning is summarized at conclusion of lesson
 - j. Teacher places the writing on wall for students to read (environmental print)
-

APPENDIX F

Control Fidelity Checklist

Rate the interventionist by placing a corresponding number in each box for each item
1 = yes 2 = no

Interventionist Name: _____

Date of Intervention: _____

Start Time: _____

Ending Time: _____

Does the interventionist display the following attributes during the session?

- a. Students have opportunity to look at books and interact with texts.
 - b. Students have opportunity to practice authentic writing.
 - c. Teacher facilitates reading activities with students.
 - d. Teacher facilitates writing activities with students.
-

APPENDIX G

Parental Consent Form

**Middle Tennessee State University Institutional Review Board
Parental Informed Consent Document for Research**

Principal Investigators: Penny Thompson

Study Title: Scaffolding Emergent Literacy Skills in Pre-Kindergarten Through Writing Instruction

Institution: Middle Tennessee State University

Name of participant: _____ Age: _____

The following information is provided to inform you about the research study and your child's participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below. You will be given an opportunity to ask questions, and your questions will be answered. Also, you will be given a copy of this consent form. This study involves a 15 minute reading and writing lesson for 14 weeks during the regular school hours and will be taught by your child's teacher.

Your child's participation in this research study is voluntary. He or she is also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. Purpose of the study:

This fourteen-week research study will examine the development of an interactive reading and writing intervention in pre-k classrooms. The 20 students in each classroom will be randomly assigned to one of two groups, either a control group or a condition group. The ten students in the control group will be participating in the daily "center time" which means the students play in various themed centers placed around the classroom. Each center has writing materials and books available for students to incorporate into their play situation.

The ten students selected for the condition group will receive a reading and writing lesson. This lesson involves a storybook reading and interactive writing instruction with the classroom teacher. The lesson will consist of: 1] text read aloud experience of sociocultural literature, 2] interactive writing experience to plan and construct texts, and 3] letter-sound instruction involving word building and phoneme segmentation, demonstrations of print concepts, and discussions of cultural awareness. Students will be audio recorded during every lesson and occasionally video taped only during the lesson while working with the teacher.

Parental Consent Form (continued)

Assessments are already part of the regular Pre-k programming for students. The *Brigance* screener is a comprehensive measure of basic skills, and it takes about 10 minutes to administer. *Children's Progress* is an online assessment that takes about 20 minutes to measure reading and writing skill progress. In addition, the *Test of Early Written Language* will be given to assess student basic writing skills in about 20 minutes, and the *Clay Observation Survey of Early Literacy Achievement* will measure alphabet letter, sound knowledge, and print knowledge in about 10 minutes. All assessments are part of the normal activities for pre- students. They help teachers to gather information to guide instruction and better plan individual learning for students.

- 2. Description of procedures to be followed and approximate duration of the study:** The study is expected to last from August 1, 2014 to January 30, 2015. The teachers and students will participate in activities within the following timeline:

August 2014	Reading and Writing Intervention begins Parent Questionnaire Student reading and writing motivation survey Pre-K Assessments given- COS, TEWL, & Brigance Videotaping of one writing session Audiotaping of writing sessions
September 2014	CPAA Assessment
November 2014	Interview & Student interview
December 2014	Reading and Writing Intervention ends Student reading and writing motivation survey Post Pre-K Assessments -COS & TEWL
January 2015	Post Pre-K Assessments- CPAA

- 3. Expected costs:** No expected costs.
- 4. Description of the discomforts, inconveniences, and/or possible risks that can be reasonably expected as a result of participation in this study:** The reading and writing intervention will provide 15 minutes more time with the teacher during each lesson. This study may show that students with the intervention perform better on assessments or that students without the intervention perform better on assessments.
- 5. Compensation in case of study-related injury:** N/A

Parental Consent Form (continued)

6. **Anticipated benefits from this study:** The study benefits will allow us to understand how well the reading and writing instruction works with young students. We aim for a kindergarten readiness level in reading skills by the end of the year. The children are also expected to enjoy participating in reading and writing activities.
7. **Alternative treatments available:** N/A
8. **Compensation for participation:** N/A
9. **Circumstances under which the Principal Investigator may withdraw you from study participation:** N/A
10. **What happens if you choose to withdraw from study participation:** You may withdraw at any time without penalty. Your child will continue with regular classroom activities.
11. **Contact Information.** If you should have any questions about this research study or possibly injury, please feel free to contact me at penny.thompson@lssd.org or Dr. Amy Elleman at Amy.Elleman@mtsu.edu.
12. **Confidentiality.** All efforts, within reason, will be made to keep the personal information in your child's research record private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee State University Institutional Review Board, Federal Government Office for Human Research Protections, *if* you or someone else is in danger or if we are required to do so by law.
14. **STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY**
I have read this informed consent document and the material contained in it has been explained to me verbally. I understand each part of the document, all my questions have been answered, and I give permission for my child to participate in the study.

Date

Signature of Parent/Guardian

Consent obtained by:

Penny S. Thompson

Date

Signature

Penny S. Thompson,
Instructional Coordinator/Pre-K Director
Lebanon Special School District

APPENDIX H

Teacher Interview

What principles underlie effective writing instruction?

1. Effective writing instructors realize the impact of their own writing beliefs, experiences, and practices.
 2. Effective writing instruction encourages student motivation and engagement.
 3. Effective writing instruction begins with clear and deliberate planning, but is also flexible.
 4. Effective writing instruction and practice happen every day.
 5. Effective writing instruction is a scaffolded collaboration between teachers and students.
-
1. What are your beliefs, experiences and practices of writing?
 2. How do you motivate and encourage student writing?
 3. How do you plan for student writing opportunities?
 4. How often do you think students should write?
 5. How often do you provide opportunities for students to write?
 6. How do you scaffold student writing?
 7. How did you learn to write?

Note. Based on *Zumbrunn & Krause, 2012*. Recommendations for Best Practices in the Writing Classroom.

APPENDIX I

Student Interview

Here's How I Feel about Reading and Writing

Name _____ Teacher _____ Date _____

1. Are you a good reader? _____
2. Where did you learn to read? _____
3. What do you like best about reading? _____
4. What do you not like about reading? _____
5. What do people do to be better at reading and writing? _____
6. Are you a good writer? _____
7. Where did you learn to write? _____
8. What do you like best about writing? _____
9. What is the worst thing about writing? _____
10. What can you do to be a better reader and writer? _____

Note. Adapted from *Assessment for Reading Instruction, Second Edition*, by Michael C. McKenna and Katherine A. Dougherty Stahl. 2009.

APPENDIX J

Reading and Writing Student Survey

1. How do you feel about reading books at home?
 2. How do you feel about reading books at school?
 3. How do you feel when someone reads a book to you?
 4. How do you feel about reading books by yourself?
 5. How do you feel about reading instead of playing?
 6. How do you feel about writing at home?
 7. How do you feel about writing at school?
 8. How do you feel when someone writes with you?
 9. How do you feel when you write by yourself?
 10. How do you feel about writing instead of playing?
-

Adapted from Elementary Reading Attitude Survey by McKenna & Stahl

APPENDIX K

Tools of the Mind Scaffolded Writing Developmental/Learning Trajectories

PL = plan. Child has an idea of the plan or what to draw/write in.

P = picture. Child represents her idea of message with a representative picture of herself and the objects involved in the idea she is writing about.

M = message matches the teacher's lines. The child creates a message using the stem (I am going to ...) and when the teacher writes the child's message, the child slows her words to match the teacher's writing.

L = lines. Child makes line to represent her words and has voice-to-line match.

IS = initial sounds. Child writes a letter to represent the initial sound she hears in the word that is close to the correct sound; the child also represent the word's initial sounds correctly.

ES = ending sounds. Child writes a letter to represent the ending sound she hears in the word that is close to the correct sound; the child also represent the word's initial and ending sounds correctly.

MS = middle sounds. Child writes a letter to represent the medial sound she hears in the word that is close to the correct sound; the child also represent the word's initial and ending sounds correctly.

AP = alphabetic principle. Child represents each of the consonant and some vowel sounds in the word in the order in which they appear in the word.

Source. 2009-2011 D.J. Leong, E. Bodrova, B.

APPENDIX L

IRB Approval



7/31/2014

Investigator(s): Penny S. Thompson, Dr. Amy Elleman

Department: Literacy Studies

Investigator(s) Email: pst2f@mtmail.mtsu.edu, Amy.Elleman@mtsu.edu

Protocol Title: "Scaffolding Emergent Literacy Skills in Pre-Kindergarten Through Writing Instruction "

Protocol Number: 15-013

Dear Investigator(s),

The MTSU Institutional Review Board, or a representative of the IRB, has reviewed the research proposal identified above. The MTSU IRB or its representative has determined that the study poses minimal risk to participants and qualifies for an expedited review under 45 CFR 46.110 and 21 CFR 56.110, and you have satisfactorily addressed all of the points brought up during the review.

Approval is granted for one (1) year from the date of this letter for 180 participants.

Please note that any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918. Any change to the protocol must be submitted to the IRB before implementing this change.

You will need to submit an end-of-project form to the Office of Compliance upon completion of your research located on the IRB website. Complete research means that you have finished collecting and analyzing data. **Should you not finish your research within the one (1) year period, you must submit a Progress Report and request a continuation prior to the expiration date.** Please allow time for review and requested revisions. Failure to submit a Progress Report and request for continuation will automatically result in cancellation of your research study. Therefore, you will not be able to use any data and/or collect any data. Your study expires **7/31/2015**.

IRB Approval (continued)

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to complete the required training. **If you add researchers to an approved project, please forward an updated list of researchers to the Office of Compliance before they begin to work on the project.**

All research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion and then destroyed in a manner that maintains confidentiality and anonymity.

Sincerely,

Kellie Hilker
Compliance Officer/ MTSU Institutional Review Board Member