Preschool Teacher Knowledge and Skills: 
Phonemic Awareness and Instruction

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PRESCHOOL TEACHER KNOWLEDGE AND SKILLS:
PHONEMIC AWARENESS AND INSTRUCTION

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A dissertation submitted in partial fulfillment
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ABSTRACT

The extent of phonemic awareness knowledge and skills early childhood teachers bring to beginning literacy instruction lays the foundation upon which reading success is built for preschool children in their care. A significant number of preschool children receive their first literacy instruction in community-based or Head Start preschools. Phonemes are the individual sounds that make up spoken words and developing the ability to attend to the sounds that letters represent is the first step in learning to read. No published studies were found assessing the ability of teachers in these two settings to provide effective instruction in phonemic awareness.

The Survey of Teacher PhAKS (Phonemic Awareness Knowledge and Skills) was administered to Head Start and community-based teachers using a pencil-and-paper format. Additional survey responses were received from an online survey sent to community-based teachers. From a random sampling of completed surveys received, 32 surveys were chosen from each setting. Data were compared to determine the level of knowledge and skills preschool teachers possessed to provide effective phonemic awareness instruction.

Even though there were a small number of participants, which precludes drawing any definitive conclusions, there were characteristics within the data that can inform future research. The mean of correct responses made by each group was statistically very nearly the same, with each group answering approximately one third of questions correctly. Variety within the responses to individual questions was noted. For instance, Community-based preschool teachers demonstrated more knowledge with instruction-related questions while Head Start teachers scored higher with questions about definitions and learning activities. Neither group of participants used the response choice of "I'm not sure" with any frequency.
Phonemic awareness is the first step preschool children traditionally take toward learning to read. The similarity of limited knowledge and skills about PA observed in the responses to the survey instrument by both community-based and Head Start preschool teacher supports the need for more research on this topic within these two settings. Community-based preschool teachers are much more difficult to access than Head Start teachers, but the need is very nearly the same. The efforts required to survey a meaningful number of community-based preschool teachers and the limited knowledge and skills demonstrated by the teachers who have completed it, indicates that much more attention and research is needed for both these teachers and for Head Start teachers as well.
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Last but not least, I thank my family and friends who supported me throughout this process. I thank my sister who had to put up with the mounds of papers and books in our living space. I thank my mother, my son, and my grandchildren for their understanding my absence at so many family events, and my friends who supplied me with relaxation and humor at our monthly game night. They saved my sanity.
Dedicated to Dr. Joseph Morgan

The one constant throughout

both my graduate programs.
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CHAPTER ONE
INTRODUCTION

Since the early 1900s when reading disabilities became a topic of interest in literacy research, teachers and researchers have been trying to accurately identify the cause of, as well as find solutions for, children who struggle to learn to read (Huey, 1908/2009; Smith, 1934/1965). Early research of skills at the phoneme level began to emerge in the United States (US) in the 1970s, and was considered linguistic in nature by many researchers (Williams, 1984).

The National Association for the Education of Young Children (NAEYC) first addressed literacy in 1998 through a joint position paper with the International Reading Association (IRA, 1998; NAEYC, 1998). This document established developmentally appropriate (DAP) reading and writing instructional practices for young children. These practices included: (a) reading aloud to children, (b) exposure to and concepts about print, (c) alphabetic principles, (d) linguistic awareness, (e) phonemic awareness, and (f) invented spelling.

In response to the poor reading outcomes for students in the US, the National Reading Panel (NRP; NICHD, 2000) was convened with the goal of determining the most effective approach to teaching reading. The NRP report identified six instructional techniques critical for children to become successful readers: (1) phonemic awareness, (2) phonics, (3) fluency, (4) guided oral reading, (5) teaching vocabulary words, and (6) reading comprehension strategies. Coyne, Zipoli, and Ruby (2006) conducted research on the critical skills of phonemic awareness, phonics, fluency, vocabulary, and comprehension. The authors applied the label “Big 5 Ideas” to these literacy skills. Even though this phrase has been picked up in the research, many others had conducted research on these skills before them.
The reading research community in the US had reached a similar conclusion when the National Early Literacy Panel (NELP) was convened in 2002, for the purpose of investigating statistically effective ways to alleviate the stagnation of literacy achievement since the early 1970s (Shanahan & Lonigan, 2013). The committee used meta-analysis to review literacy research whose participants were in preschool or kindergarten settings. The NELP meta-analysis of studies contained only randomized control trial (RCT) and quasi-experimental design (QED) studies, primarily of phonemic awareness (PA), phonics, and alphabetic knowledge (AK). The effect sizes for interventions that contained both PA and phonics training had a statistically reliable impact on PA, AK, Oral Language, and phonics (Lonigan, Schatschneider, & Westberg, 2008).

The more skills gained in preschool, the greater the chance every child has of mastering the critical skill of reading (Johnston & Watson, 2004). Children’s level of reading skill, regardless of the presence or absence of a reading disability, is established in the early years of instruction (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). In 2010 the National Governors Association, commissioned the development of a system of more rigorous standards for states to follow. After careful research of the educational content standards of US economic competitors worldwide, the Common Core State Standards (CCSS; Common Core State Standards Initiative, 2010) were presented to states for adoption. It was hoped that the adoption of these more rigorous standards would support the improvement reading scores, as measured by the reading scores of fourth and eighth grade students in the US (NAEP; National Center for Educational Statistics, 2015).

The adoption of these more rigorous content standards by most states presented two problems: (1) kindergarten students are required to enter kindergarten with more reading,
writing, and math skills (beyond the scope of this study) than many early childhood preschool settings have been prepared to offer, and (2) there is not a large focus on the skills of reading in the standards. Since the adoption of the new K-12 content standards, all states have developed early childhood content standards (CELELO, 2015). Seventeen states, including Massachusetts (Massachusetts Department of Elementary and Secondary Education, 2011), New York (New York Department of Education, 2011), and Pennsylvania (Pennsylvania Department of Education, 2014), have incorporated pre-kindergarten standards into the state content standards documents (DeBruin-Parecki & Slutzky, 2016). This approach facilitates alignment between pre-kindergarten and kindergarten literacy learning goals, and supports preschool teachers’ forward planning, as well as kindergarten through third grade teachers’ access to pre-kindergarten standards for intervention planning. When providing developmentally appropriate practices within a curriculum framework, early childhood education teachers need to gain a thorough knowledge of these standards (NAEYC, 2009).

Early Childhood and Early Childhood Special Education teachers are both charged with finding and using the best methods for teaching all children within early childhood settings in order to promote the most growth possible for each child (Voss & Bufkin, 2011). Effective early literacy instruction that results in child competency in PA is one of the most important predictors of decoding, reading comprehension, and spelling skills (NELP, 2008). Preschool educators with a strong knowledge base in emergent reading skill instruction can have a positive impact on the abilities of children to be ready to read in kindergarten (Hilbert & Eis, 2014).

Developmentally appropriate practices (DAP) for literacy instruction in early childhood education settings are those that encourage children to be “active constructors of meaning” (Neuman & Roskos, 2005, p. 2). The early childhood environment should emphasize: (a)
engagement in meaningful literacy learning experiences, (b) a continuum between reading and writing, (c) attunement to both normal and extraordinary variances in literacy skill development, (d) an understanding of the home language when developing language and literacy experiences, and (e) multiple and frequent assessment of progress in reading and writing (Neuman & Roskos, 2005).

Learning to read is a very complex skill to teach and to learn. The English language is an alphabetic system, and its orthography, the written or printed symbols that represent the sounds in language, is very complex. There are approximately 44 sounds, labeled phonemes that represent the 26 letters of the alphabet. One letter represents one particular sound for most letters. For some letter/sound combinations, however, both vowels and consonants require the presence of another particular letter to represent the correct sound (Williams, 1984). Bearing this in mind, children require specific, purposeful training in the segmentation of words into phonemes. The first steps in PA training are auditory in nature. The development of an awareness of the sounds, and then the ability to manipulate the sounds in the spoken word must be learned in the proper order (University of Oregon Center on Teaching and Learning, 2009).

“A phoneme is the smallest unit of sound that can change the meaning of a word” (Goswami & Bryant, 1990, p. 2). The first developmental step observed when children are ready to learn to read is their awareness that words are made up of individual sounds, phonemes (Bradley & Bryant, 1983).

Elkonin (1963) defined learning to read from an educational psychology perspective that required the interaction with the “sound material of language” (Elkonin, 1963; p. 165). He identified a “genetic connection” (Elkonin, 1963; p. 165) between three stages that supported beginning reading skills acquisition. Stage one; “formation of the mental action of sound
analysis” (Elkonin, 1963; p. 165) was focused upon teaching the young child the separate sounds of their language. The formation of the correct mental action was needed to help the child distinguish the sounds in words. Guiding children to form this mental action required five different stages: “(1) establishing a preliminary idea of the task; (2) mastering the action with objects; (3) mastering the action on the plane of speaking aloud; (4) transfer of the action to the mental plane; [and] (5) final establishment of the mental action” (Galperin as cited in Elkonin, 1963; p. 166).

Seymour (1970) specified methods for effectively guiding children toward learning the “concept of a phoneme as a group of perceivable language sounds,” (p. 176). The development of this knowledge allowed children to obtain a solid understanding of the alphabetic principle. These methods centered on the perception of language as sound represented in symbols.

Fox and Routh (1975) identified a developmental progression in the ability of young children to analyze spoken language from sentences into words, into syllables, and finally into phoneme units. Four-year old children were able to segment 20 out of 32 words into the proper phonemes.

Bradley and Bryant (1983) conducted a 4-year longitudinal study that measured children’s sound categorization skills in reading and spelling as they received 40 sessions of training, beginning at 4 years of age. The results suggested a “high correlation between initial sound categorization scores and the children’s reading and spelling over 3 years later” (p.419). The study supported the positive effect of rhyme and alliteration training for four-year old students, and the value of early training in PA.

According to the results of a study conducted by Juel, Griffith, and Gough (1986), PA is required before exposure to print will have an effect upon reading acquisition for first grade
children. Phonemic awareness was shown to have a statistically significant influence upon word recognition, spelling, reading comprehension, and writing. The impact was shown to continue to have an effect, albeit a lesser one, in second grade.

Phonological sensitivity at the phoneme level appears to be part of a bi-directional continuum of skills found within what Anthony et al. (2002) referred to as phonological ability. The observed variance in the reading ability of preschool children tested at 4-5 years of age compared to 2-3 years of age revealed an overlap in sensitivity to the less complex words and syllables and the more complex phoneme level.

Lerner and Lonigan (2016) extended the study of this relationship to encompass letter knowledge. The findings from their study supported their hypothesis that letter knowledge played a part at the sublevels of words, syllables, and onset-rime pairs in the growth rates of phonemic awareness as well as letter knowledge for 4-year-old children.

Activities to teach phonemic awareness must support the ability of young children to perceive the series of sounds that make up the spoken word (Yopp, 1992). Activities such as sound matching, sound isolation, blending individual sounds to form words, adding and substituting sounds, and segmenting sounds were shown to provide the most effective support for developing PA, within DAP in a preschool setting.

Ziolkowski and Goldstein (2008) investigated the use of explicit PA instruction with repeated exposure within a shared reading intervention. The subjects were thirteen preschool children with language delays from low socio-economic neighborhoods. Children at high risk for reading disabilities improved in emergent literacy skills as evidences by a multiple base-line study.
Goldstein (2011) addressed the challenges involved when teaching young children who exhibited a wide range of disability characteristics. The first step in developing a plan required making the right choice in what to teach students in the preschool classroom. Goldstein based the recommendation upon the broad definitions of code-based and meaning-focused skills (Whitehurst & Lonigan, 1998) as the “what” to teach: (a) awareness of phonemic elements in words (PA); (b) procedures for decoding words not previously seen in print by using knowledge about relationships between letters and sounds (phonics); and (c) recognition of a large number of words on sight (fluency).

**Early Childhood Educators' Knowledge and Skills Related to Phonemic Awareness**

Literacy instruction in many ECE and ECSE settings require enhancement in order to provide more focused literacy instruction aimed at increasing the skill level of children entering kindergarten. In order to expand literacy instruction, ECE and ECSE teachers would need to have a solid understanding of PA. An assessment of preschool teachers’ current knowledge and skills to support such an approach is needed. A search of the literature database yielded surveys used to assess the phonemic awareness and phonological awareness knowledge and skills, designed of a wide range of teachers. Surveys were identified that assessed literacy knowledge of preschool teachers (Cunningham, et al., 2009), teacher candidates’ perceived and actual PA knowledge (Martinussen, Ferrari, Atkins, & Willows, 2015), and first year teachers’ PA knowledge and skills (Cheesman, McQuire, Shankweiler, & Coyne, 2009) in public school systems. No studies were identified that surveyed the PA knowledge of Head Start or community-based preschool teachers.
Statement of Problem

Despite the shift to more rigorous standards (Common Core State Standards Initiative, 2010), reading scores are not increasing (NAEP; National Assessment of Educational Progress, 2015). On the latest NAEP report, there was no significant difference between the 2013 and 2015 average reading scores for fourth grade and a decrease for eighth grade students. The minimal increase in reading scores means that 64% of fourth grade students read at a basic or below basic level.

A closer look at the trends reveals only a four-percentage point increase in the average reading scores of fourth grades students and only a one-point average increase for eighth grade students (NAEP, 2013). People who fall in the basic or below basic level for reading are more likely to earn less than $300 per week, require public assistance, and experience health problems (Lerner & Lonigan, 2016; Wood, 2010). These reading statistics are “alarming” (Lerner & Lonigan, 2016, p. 167), particularly given that the trend dates back to the 1970’s (Shanahan & Lonigan, 2013).

The limited scope of PA and instruction in the content standards in the US may result in a limited level of instruction being provided in teacher preparation programs, as well as the professional development in early literacy skills that are provided through agencies responsible for early childhood programs. As a nation, it is important to explore methods for teaching foundation skills to preschool children that may offer more desirable outcomes in reading than the US education system has been able to achieve. The starting place is emergent literacy instruction, the weight of which falls upon early childhood (ECE) and early childhood special education (ECSE) teachers to provide.
Purpose of the Study

The purpose of this study is to identify the knowledge and skills that preschool teachers within a variety of early childhood education settings possess to provide high quality PA instruction to young children, including those with or at risk for disabilities. Specifically, these settings included Head Start and community-based childcare settings. In a large city in the southwest US in 2015, out of a total of 969 Early Education and Care (EEC) providers, there were 343 licensed community-based programs, and 65 Head Start programs providing early education services serving 163,355 children between the ages of 0-5. Within these settings, 2270 lead or head teachers and 1647 teacher assistants provided instruction. A breakdown of children by age was not provided within these two programs to allow for an estimate of the number of 4-year-old children being taught (The Children’s Cabinet, 2016). However, an estimated 33,000 children could be receiving PA instruction in Head Start and community-based preschool settings. Understanding the level of PA knowledge and skill those preschool teachers had to early childhood literacy instruction is important information for many different stakeholders.

Research Questions

The following research questions support the purpose of this study:

1. What level of knowledge and skills do preschool teachers possess in order to identify phonemic awareness instruction?

2. Is there a difference in the knowledge and skills of phonemic awareness between preschool teachers with different levels of experience or education?

3. Is there a difference in the level of knowledge, skills, and ability to distinguish between phonemic awareness and instruction for preschool teachers from Head Start and community-based preschool programs?
Significance of the Study

With the adoption of the CCSS initiative by most states in the United States, the expectations for academic learning, particularly within early reading, have changed dramatically. Children are now expected to come to kindergarten with more literacy skills than many children are currently exhibiting. However, as Roskos and Christie (2011) pointed out, the research in literacy has slowed. It has been shown that as much as 50% of individual differences in PA of second grade students who attended Head Start preschools were attributed to the instruction they received while attending (Whitehurst in Yeh, 2003).

The results of this study provided information about the level and caliber of PA knowledge and instruction received by children living in poverty who attended Head Start programs (Wood, 2010), and for children who attended community-based preschools. Understanding scope of preschool teachers’ knowledge and skills as they relate to PA will provide valuable information to those who provide early childhood literacy teacher education or professional development opportunities.

Limitations of the Study

There were several limitations to this study, and results and conclusions should be viewed through the lens of these limitations. These included:

1. There was a low response rate to the online survey, particularly within the community-based early childhood setting. To attempt to address this low response rate, participants were randomly chosen from each group (i.e. Head Start, community-based early childhood settings).
2. The survey was distributed using two methods – paper and pencil at a Head Start staff meeting, and online distribution for community-based early childhood settings. These different methods could have influenced survey completion.

3. The sample size used for analysis within this study was small. The size of groups could have an impact on the statistical analyses and subsequent outcomes of the study.

4. While training was found to be a covariate to differences in early childhood educator knowledge and skill related to phonemic awareness instruction, attendance at training was self-reported by participants. No additional information related to the type of training received by early childhood educators was analyzed.

**Definition of Terms**

The following definitions clarify the terminology used in this research.

**Alphabetic Principle**

Alphabetic principle refers to the understanding that letters represent sounds and make up words. (IRA, 1998).

**Community-based Child Care Centers**

Community-based Child Care Centers are those licensed by the state to provide partial or all-day curriculum childcare to children (NDPBH, 2014).

**Developmental Delay**

Developmental delays are a group of conditions impacting learning, physical abilities, language, or behavior (IDEIA, 2004).
**ECSE**

Early Childhood Special Education refers to services provided to children between the ages of 3 and 8 years, and is covered under Part B of the Individuals with Disabilities Education Improvement Act (IDEA, 2004).

**Head Start Programs**

Head Start programs are funded by the federal government and provide educational, health, and well-being services to children from low-income families. (U.S Department of Health & Human Services, 2017).

**Lexical Access**

Lexical access is a unique early reading factor in which the basic sound-meaning of a lexical entry is activated from permanent memory (Lonigan, 2006).

**Lexical Entry**

Lexical entry is a part of a word, a single word, or a chain of words (Lonigan, 2006).

**Phonics**

Phonics is a method of instruction associating letters with the sounds of speech (Cheesman et al., 2009).

**Phonemes**

Phonemes are the individual sounds that make up spoken words (Williams, 1984).

**Phonemic Awareness**

Phonemic awareness is the ability to notice, identify and manipulate the individual sounds of spoken language (Shaywitz, 2003).
**Phonological Awareness**

Phonological awareness is the ability to detect and manipulate sounds in a word at the syllable, onset, and rime level (Lerner & Lonigan, 2016).

**Phonological Processing**

Phonological processing refers to the use of the sounds in language in processing written and oral language (Lonigan, Burgress, Anthony, & Barker, 1998).

**Pre-kindergarten**

Pre-kindergarten refers to a setting that provides educational instruction for children four years old or younger (DeBruin-Parecki & Slutzky, 2016).

**Summary**

The failure of some children to learn to read has prompted much of the research discussion and teaching methodologies in the US for the past two decades. The creation of compensatory preschools under Project Head Start as part of the War on Poverty (1964) legislation started the growth in the percentage of children attending preschools from about 20% (van Kleeck & Schuele, 2010) to 41% in 2015 (U. S. Department of Education, 2015).

The English language is the most difficult language to learn because the large variance in sound-spelling correspondences (Share, 2008). In spite of the recommendations of the NRP (2001) and NELP (2008) regarding the most effective methods for teaching young children to read, the latest educational report card for reading showed that 54% of fourth graders read at a basic or below basic level (NAEP, 2015).

Since the introduction of Common Core State Standards (Common Core State Standards Initiative, 2010) and the increased rigor in the expectations for students by the end of kindergarten, children who have not had preschool literacy training begin school up to a year
behind their peers (U.S. Department of Education, 2015). The newly adopted education law, Every Student Succeeds Act (ESSA, 2015), continues to provide funding for research to promote better early literacy outcomes under Literacy Education for All, Results for the Nation [LEARN] (Title II, Part B, Subpart 2; Bauer, 2015).

The research base in early childhood literacy instruction has revealed a shift in the focus of research about PA instruction. Early research identified that beginning PA instruction began with teaching children to attend to individual sounds in words (Elkonin, 1963; Juel, Griffith & Gough, 1986; Seymour, 1970). One focus of current early literacy research supports phonemic awareness (PA) as the initial stage (Coyne, et al., 2006). However, the majority of current research used the broader term, phonological awareness (PA; italic used to note difference in wording) as the final step in a continuum that began at the whole word level and progressed stepwise to the phoneme level (Anthony et al., 2002; Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003; Fox & Routh, 1975; Lerner & Lonigan, 2016; Lonigan et al., 2009; Lonigan, Burgess, Anthony, & Barker, 1998; Lonigan, Purpura, Wilson, Walker, & Clancy-Menchetti, 2013; Lonigan, Schatschneider & Westberg, 2008; Shanahan & Lonigan, 2013). What teachers know determines what skills children have access to, particularly in the early stages of learning to read. While there have been surveys (Cunningham, Zibulsky, & Callahan, 2009; Martinussen, Ferrari, Atkins, & Willows, 2015; Cheesman, McQuire, Shankweiler, & Coyne, 2009) to determine knowledge and skills of teachers in the public school system, no research was found that could quantify the level of knowledge and skills preschool teacher in Head Start and community-based preschools possess in order to support PA. The results of those of the surveys about PA, and much of the literature, suggested that preservice and first year preschool teachers need much more training to effectively teach PA in early childhood settings. The significant
number of children that received preschool instruction in both Head Start and community-based preschool (The Children’s Cabinet, 2016) more clearly emphasizes the impact children with little or no PA skills have upon a kindergarten classroom.
CHAPTER TWO
REVIEW OF RELATED RESEARCH

Throughout the history of education in the United States (US), research has focused on determining the most effective methods for teaching children to read words in the English language (Huey, 1908/2009; Smith, 1934/1965). It was not until the 1960s that the foundational skill most responsible for reading success, phonemic awareness (PA), was identified (Elkonin, 1963). Phonemic awareness is defined as the understanding that words are made up of a sequence of sounds that are represented by letters (Goswami & Bryant, 1990). Research into PA in the US began to appear in the literature in the early 1970s (Fox & Routh, 1975; Liberman, Shankweiler, Fischer, & Carter, 1973; Juel, Griffith, & Gough, 1986; Williams, 1984). Currently, a large focus has been placed on teaching young children in preschool phonemic awareness skills (Lerner & Lonigan, 2016).

The research base supports the importance of PA as a critical foundational skill of early literacy achievement (Brown, 2014; Coyne et al., 2006; Johnston & Watson, 2004, Juel et al., 1986). Without direct, explicit instruction, at least 25% of children would not develop consistent PA skills (Adams, 1990). Outcomes for children who do not master reading include: (a) lower salaries (often less than $300 dollars per week), (b) increased chances of receiving public assistance, at a rate of seven to 15 times that of proficient readers, and (c) reports of negative impact on overall health (Wood, 2010; Lerner & Lonigan, 2016). Preschool teachers’ proficiency in teaching PA is critical in the development of a firm foundation in reading for all children, particularly children with or at risk for disabilities in reading.

One evaluation reading research in the US (Share, 2008) suggests that there has little significant improvement in the reading abilities of US students. The US national education
evaluations lend some support to this view. As of 2014, 64% of fourth grade and 66% of eighth grade students in the US read at a basic or below basic level, with only 36% of fourth graders and 34% of eighth graders reading at a proficient level (National Center for Educational Statistics, 2015). Any evaluation of this critic must begin in early childhood education settings where many young children are first introduced to PA, the beginning of learning to read. The purpose of this chapter is to provide a review of the current research related to the teaching of PA to preschool children, including those with or at risk for disabilities in reading.

**Search Procedures for Related Literature**

The search procedures for identifying research in topics related to PA instruction, as well as teacher knowledge and skills related to PA, included textbooks and recent national reports related to reading and PA (Adams, 1990; Anthony et al., 2002; Common Core State Standards Initiative, 2010; Elkonin, 1963; International Reading Association, 1998; Johnson R. S., & Watson, J. E., 2004; Juel, Griffith & Gough, 1986; Lerner & Lonigan, 2016; National Association for the Education of Young Children, 2009; National Center for Educational Statistics, 2013, 2015; National Institute of Health and Human Development, 2000; & Vygotsky, L. S., 1978). The author conducted searches of past and current literature related to this topic using the following databases: (1) Educational Full Text (H. W. Wilson); (2) Educational Research Complete (ERIC); (3) PsychINFO; (4) JSTOR; (5) Education: A Sage Collection; and (6) Google Scholar. The following descriptors were used to search these data bases: *early childhood education, early childhood special education, early childhood research to practice, phonemic awareness and teaching methods in early childhood literacy, phonemic processing, phonological processing, phonics instruction, alphabetic principle, inclusive reading instruction, emergent literacy, and emergent literacy intervention*. The author conducted additional searches
from the reference lists contained in the articles selected from these searches. The total number of articles selected for this search was 165.

Criteria for Selection

In some instances, historical information and data were of interest. Consequently, no date restriction was applied to the approach to teaching phonemic awareness. Exclusionary criteria from the literature review included: (1) participants in kindergarten and above and (2) contents that did not test or discuss phonemic awareness in preschool. Following exclusion, 20 articles selected for the literature review.

Early Studies of Phonemic Awareness

Theories related to the importance of PA as the development of the ability in children to hear isolated sounds began to emerge in the 1960s. Elkonin (1963) identified the first step in learning to read from an educational psychology perspective as requiring an interaction with the “sound material of language” (Elkonin, 1963; p. 165). He identified a “genetic connection” (Elkonin, 1963; p. 165) between three stages that supported beginning reading skills acquisition. Stage one, “formation of the mental action of sound analysis,” (Elkonin, 1963; p. 165) was focused on teaching children the separate sounds of their language. The formation of the correct mental action needed to distinguish the sounds in words was made up of basic stages as well: “(1) establishing a preliminary idea of the task; (2) mastering the action with objects; (3) mastering the action on the plane of speaking aloud; (4) transfer of the action to the mental plane; [and] (5) final establishment of the mental action” (Galperin as cited in Elkonin, 1963; p. 166). This was accomplished using squares for each sound in a word and counters that the child used to identify each sound.
The first presentation of words was in picture form. After establishing the primary idea of the task, students worked toward mastering the task, using pictures that represented the target words. Mastery was reached for the first two steps in stages. The first stage of mastery was when the child could fill in the squares and name all the sounds in the word represented by the picture independently. Then, students would identify the sounds without the use of the squares. Finally, students would identify the sounds without the counters. Mastering the action of identifying the sounds within spoken words was reached when the child could independently identify all the individual sounds in a word presented aurally. Mastery on the intellectual plane was demonstrated when the child could name the sounds or identify the place and sound of individual letters without first pronouncing the word out loud (Elkonin, 1963).

Elkonin believed that the biggest stumbling block that young children faced in learning to read was learning the alphabet prior to understanding the association of a sound with the letter. Although this research was conducted using the Russian language, English shares the same characteristic of having a variety of sounds associated with many letters, both consonants and vowels. “Therefore, to designate the sound form of a word and syllable it is necessary to be orientated to the succeeding letter and its sound value. Without this, it is impossible [to] correctly …designate the sound form of a syllable or word” (Elkonin, 1963; p. 170).

Seymour (1970) specified methods for effectively guiding children toward learning the “concept of a phoneme as a group of perceivable language sounds” (p. 176). This knowledge allowed children to develop a solid understanding of the alphabetic principle. These methods centered on the perception of language as sound represented in symbols. Five steps were required to train children to understand the concept of a phoneme: (1) the meaning of the word “first;” (2) the meaning of sound using examples from the environment, without words being
presented; (3) first sound as an element of time rather than space, within a word, as well as the concept of one sound stopping and the next sound beginning; (4) words as groups of sounds spoken in a certain sequence; and (5) English words such as ball, book and boy having the same initial sound even though the words look very different (Seymour, 1970). These steps were taught at the sound level with no visual access. As was found by Elkonin and colleagues (1965), the process in Seymour’s study supported the need to teach young children concepts of learning based upon sound prior to presenting the concept of the alphabet and letters, which is a visual representation of words.

To do this, Seymour (1970) presented a four-step program for phonemic awareness, each with a specific activity for teaching. Perception of language was taught first, with individual sound identification, locating sounds within spoken words, and grouping those sounds into spoken words. The next step, phonemic perception, used classification of sounds in different parts of words (i.e. beginning, middle, end followed by practice with making a sound and identifying how it was made through practice and discussion. The third step introduced the alphabetic symbols for sounds. Step four introduced the decoding of known sounds as letters within words. The underlying theme within both Elkonin (1965) Seymour’s work was that of children first learning to associates the sounds of language before being presented with the visual representations.

In a study that extended the research of young children’s ability to recognize sounds at the phoneme level, Fox and Routh (1975) identified a developmental progression in the ability of young children to analyze spoken language, not beginning at the phoneme level but, from complete sentences down into words, then syllables, and finally into phoneme units. Fifty children were recruited from local day-care centers; these children ranged from 3 to 7 years of
age. Children were divided by age into five different groups. The subjects were tested in either their home or day-care center.

The testing materials consisted of eight sentences, beginning with two words in the first sentence and ending with seven words in the eighth sentence. Words known to occur with high frequency in text for children between 5 and 7 years of age were selected for the sentences.

The subjects were told to repeat exactly what the examiner said, and were offered a raisin each time the sentence was repeated exactly as it was spoken. If only a portion of a sentence was spoken, the direction and incentive were re-stated. All eight sentences were presented in the same testing session. Following this, children were guided through segmenting sentences into words by saying only a part of the sentence, then words into syllables, and finally syllables into sounds. The final task involved using a list of 13 syllables to test the children’s abilities to differentiate phonemes within the syllables for a total of 32 phonemes presented (Fox & Routh, 1975).

Segmenting sentences into words and words into syllables was consistently the same for all five age groups. Traditional syllable boundaries were used to segment the eight words presented. Three-year olds could segment 8 out of 32 sounds from syllables and four-year olds segmented a mean of 21 sounds. These results supported Fox and Routh’s (1975) hypothesis that skills related to phoneme awareness were present in children of much younger ages than previously considered.

Bradley and Bryant (1983) conducted a 4-year longitudinal study to measure children’s sound categorization skills in reading and spelling based upon rhyme. The subjects were 118 children 4 years of age and 285 children 5 years of age who had not yet started to read. They were divided into two group: one group received intensive training in letter sound categorization,
and the other group was taught to categorize other things not related to reading. Each subject received 40 sessions of training in one of four different skill groups: (1) words with shared common beginning, middle, and ending sounds; (2) sounds that were represented by common letters of the alphabet; (3) picture categorization; and (4) mathematics training.

After controlling for scores on final tests and memory abilities, data from the results suggested a “high correlation between initial sound categorization scores and the children’s reading and spelling ability over 3 years later” (p.419) and emphasized the significance of learning sounds in words at the phoneme level during preschool.

Juel, Griffith, and Gough (1986) investigated influences upon the development of early literacy skills. Their model compared the development of word recognition, spelling, reading comprehension, and writing, and the possible interrelationship of growth in these skills. Subjects were 129 first grade students attending lower middle class schools who were placed in classrooms based upon scores obtained from two different basal reading series and a supplemental synthetic phonics program. Phonemic awareness progress was evaluated by ethnicity and entering oral language skills.

According to the results, PA was required before exposure to print would influence reading acquisition. Overall, PA was shown to have a statistically significant influence on word recognition, spelling, reading comprehension, and writing. The impact was shown to continue to have an effect, albeit a lesser one, in second grade.

The methods used to teach the sounds phonemes make in words are important. Elkonin (1965) and Seymour (1970) showed the importance of training young children in the skill of listening to and identifying the sounds letters make prior to teaching the alphabet. Fox & Routh (1975) studied the ability of children as young as three years of age to segment syllables into
phonemes. Bradley and Bryant’s (1983) 4-year longitudinal study supported the power of sound correlation in developing effective reading skills in third grade, a finding also reported by Juel et al. (1986).

Teaching phonemic awareness during early childhood development has a significant impact on early reading skills as these historical perspectives demonstrate. Teachers, therefore, must possess a strong knowledge about PA and have the skill to recognize good PA instruction. Research does show that teachers of preschool children require a working knowledge of the components of PA, and the skill to provide effective instruction. However, limited research exists that explores the current level of knowledge and skills possessed by early childhood educators to engage in this important early literacy instruction.

**National Early Childhood Leadership Perspective**

**Early Childhood Literacy**

Developmentally appropriate practices for teaching literacy to young children were first introduced through joint position papers by the International Reading Association (IRA, 1998) and the National Association for the Education of Young Children (NAEYC, 1998) as a part of the first phase in the development of preschool goals, awareness, and exploration. One important area of discussion was the role of the teacher as facilitator, providing exposure to: (a) literature through sharing books, (b) models of reading behaviors, (c) talk about letters using the letter names and sounds, (d) literacy-related play activities, and (e) opportunities to experiment with writing. Until the time of these publications, phonemic awareness had been acknowledged as an important component in learning to read, but the exact mechanism had yet to be identified.

By 2009, the importance of early childhood education in the future literacy of young children was evident in the literature (NAEYC, 2009). Increasing achievement and reducing
learning gaps, connecting learning in early childhood settings to elementary school requirements, and the importance of teacher knowledge were recognized as critical to educational effectiveness. Children’s lack of exposure to literacy was known to have a negative impact on their ability to read. Lack of exposure to language in the homes of children living in poverty also negatively affected literacy development. These children generally had fewer conversations with family members, with fewer numbers of words used in those conversations.

With third grade student achievement assessed annually in the US, the need for children to enter kindergarten possessing the foundational skills of literacy to meet grade-level reading expectations became an important focus of educational policy (NAEYC, 2009). An increase in the number of state-funded preschools had a positive impact on this need. At the time of publication of the NAEYC position paper, approximately 35% of all four-year olds were in preschool programs across the nation. Aligning early childhood programs with kindergarten through third grade programs, and all the associated pressure, was considered problematic for young children. Literacy was identified as one of the areas needing more research to establish developmentally appropriate, effective early literacy programs for preschools.

The National Early Literacy Panel (NELP, 2008) was a panel of literacy scholars convened to identify, reviews, and extract scientifically proven literacy development and intervention methodologies. Initially, the panel members identified the abilities and skills that had been shown to support or predict later literacy skills. Search term categories included language, cognition, motivation, schooling, home and family, word learning, fluency, and reading comprehension (Lonigan, Schatschneider, & Westberg, 2008).

Once relevant studies were identified, a meta-analysis was conducted to analyze early literacy skills for preschool and kindergarten. Secondary analyses more clearly defined factors
contributing to the strong association observed between these predictors and conventional literacy skills (Lonigan et al., 2008). In preparation for the meta-analysis, predictors of interest in the literature search were those that supported conventional literacy skills. Secondary analyses looked for factors that related to a strong association of the predictors of those skills. Standardized tests or measures identified in the methods sections of articles were used to group predictor and outcome measures. Average correlational relationships of 0.50 or larger were classified as strong, those between 0.30 and 0.49 were classified as moderate, and those below 0.30 were considered weak (Lonigan et al., 2008).

Some factors that could affect the size of the average correlation included the time between assessment and the measurement of the dependent variable, reliability measures, and restriction of the range of subjects. Measured skills included those relating to: (a) decoding, (b) reading comprehension, and (c) spelling. Alphabet knowledge (AK) and PA showed the strongest relationships between literacy-related predictor variables for later conventional literacy outcomes. Results were highly reliable and stable. Combining AK and PA supported decoding, reading comprehension, and spelling (Lonigan et al., 2008).

The introduction and progression of research focused on providing effective instruction in preschools, including literacy instruction has grown in significance and volume. Literacy research was identified and evaluated by NELP (2008) using meta-analyses of studies that focused on many aspects of literacy, including PA. Alphabet knowledge and PA were shown to be important to the development of strong decoding skills, reading comprehension, and spelling. Again, it is important that early childhood educators have the knowledge and skills to teach these essential phonemic awareness skills to young children in order to ensure academic success.
Preschool Phonemic Awareness Instruction

The National Reading Panel (NICHHD, 2000) identified six instructional techniques that, when taught in combination, had the largest impact on young children learning to read. These instructional techniques were: (1) phonemic awareness (PA), (2) phonics, (3) fluency, (4) guided oral reading, (5) teaching vocabulary words, and (6) reading comprehension strategies. The first skill to be taught, PA, must be explicit. This was found to be particularly important for children who were exposed to less reading at home.

Yopp (1992) suggested that the primary reading skill young children must develop an understanding of is “the relationship between the letters in the writing system to the phonemes in the language” (p. 697). This included an awareness of the individual sounds (i.e. phonemes) in words and the development of skill in segmenting them.

The objective of PA activities was to support the development of children’s perception of speech as a series of sounds, and to develop effective methods for manipulating those sounds were recommended. When developing PA activities, Yopp (1992) recommended developmentally appropriate “sounds in the speech stream” (p. 699). Developmentally appropriate activities included: (a) sound matching, (b) sound isolation, (c) sound blending, (d) sound substitution, or (e) sound segmentation. As a first step, the nature of chosen tasks required identification. Children were attracted to activities that were playful, had an amusing game-like quality (such as riddles and guessing games), and contained songs with a familiar melody.

Yopp (1992) suggested sound matching through song as the first activity. In this activity, the importance of using only letter sounds, not letter names, was emphasized. Pictures of familiar objects were used, as well as toy boxes or grab bags containing toys with target sounds were recommended. Familiar songs were used to encourage children to identify words
beginning with the same sound. Sound isolation activities involved isolating beginning, middle, or end sounds in words. A single sound, several sounds, or the location of the target sound could be the focus of the activities. Yopp (1992) recommended the tune for, “Old MacDonald had a Farm,” as a vehicle for practice.

Blending of sounds through the manipulation of individual sounds was modeled through “clues” being pronounced slowly by the teacher. Picture cards were used, along with a treasure box or grab bag (Yopp, 1992). Several different songs were suggested for this activity. Sound repetition was one method for teaching sound segmentation skills. Repeating just the first sound of common words, such as children’s names or common objects around the classroom, was engaging for children and allowed for independent practice. “Twinkle, Twinkle, Little Star,” was a useful song for this activity (Yopp, 1992). The use of no more than three sounds was recommended.

Yopp (1992) provided recommendations to ensure that the activities were developmentally appropriate: (1) the development of positive feelings toward the learning activities through varied playful and fun activities; (2) group activities that supported the social aspects important in early learning, (3) facilitation of exploration and experimentation with an abundance of positive and enthusiastic feedback from teachers, (4) preparation and allowance for diversity of learning within groups, (5) a view of the activities with an eye for facilitation of skills but not as diagnostic, and (6) use of visual cues such as written words or letters used as a background without interfering with the verbal nature of the activities. This was especially important for children with limited exposure to the alphabet.

Providing children with opportunities accompanied by sufficient support needed to learn are when teaching PA to preschool children (McGee & Ukrainetz, 2009). These considerations
included knowing if young children understood the words commonly used during instruction, such as “first sound” (p. 600). Modeling the task at the beginning of instruction was another recommended consideration.

McGee & Ukrainetz (2009) presented scaffolding as a recommended strategy. Scaffolding was defined as “intentional, strategic support… that allows children to complete tasks…independently” (p. 600), and included comments and instructions to ensure children knew how to answer questions properly. To use this tool effectively, the needed type and level of support for each child was determined.

Three levels of scaffolds were presented (McGee & Ukrainetz, 2009). First, initial sounds were practiced, using the teacher and children’s names for instruction. The teacher provided as much information as needed to each child as they took their turn, such as a reminder that the correct answer needed to be the sound of the letter, not the name, or drawing the child’s attention to the teacher’s mouth as she said repeated the initial sound in the name.

These levels of scaffolding (McGee & Ukrainetz, 2009) included: (1) the intense level, which included use of exaggeration and emphasis on the target sound, with reminders for students to watch the teacher’s mouth as the response is repeated numerous times; (2) the moderate level, which included isolation and emphasis on the target sound by “…bouncing or elongating the sound…” (p. 600) in the word; and (3) the minimum level in which stress was put on the first sound while asking the question. Over time, as each child succeeded in the process, support could be reduced.

Goldstein (2011) recognized the importance of teaching code-based and meaning-based early literacy skills to children with developmental and intellectual disabilities. Access to early literacy artifacts and experiences, much as those in lower socio-economic status (SES) homes,
supported learning. The educational implications of limited access to reading, writing, and play materials, as they related to literacy, were seen in homes of students with developmental or intellectual disabilities. For children with severe or multiple disabilities, literacy instruction occurred in the home, and was provided by special education teachers.

To benefit from PA instruction, children required language skills sufficient to understand the “meta-language” (Goldstein, 2011, p. 272) required to teach concepts of PA and the alphabetic principle, as well as a continuum of decoding and sight word recognition. Shared reading and PA, as part of a code-focused learning intervention, were tools used by early childhood special education teachers to promote reading acquisition in children with severe intellectual or developmental disabilities.

Children in early childhood settings who were at risk for developmental delays in reading required the effective delivery of instruction. Three principles shown to produce strong effects for young children were: (1) conspicuous instruction, (2) instructional scaffolding, and (3) opportunities for practice accompanied by high-quality feedback (Coyne et al., 2006). The components of conspicuous instruction were direct, explicit instruction, presented incrementally in a carefully designed, systematic format. The method identified required the teacher to: (a) use extensive modeling, (b) allow frequent opportunities for guided practice, and (c) provide opportunities to perform the task independently. This method allowed the inconspicuous, inside skills of PA and phonics to be experienced conspicuously from the outside (Coyne et al., 2006; Whitehurst & Lonigan, 1998).

Instructional scaffolding was provided through teaching and materials selected at the child’s instructional level for words (Coyne et al., 2006). As the child’s skills developed, the scaffolding was removed at each step or stage as the child became independent with the target
skill. Examples of scaffolding materials were visual prompts and concrete manipulative devices, such as letter tiles or pictures prompts, to teach phoneme sounds. The last key element of effective instructional delivery was frequent opportunities to practice, followed by high-quality feedback that was best provided in small, mediated groups. This setting allowed the teacher to provide immediate, specific feedback followed by immediate error correction by the student, thus reinforcing the correct sound or word (Coyne et al., 2006).

Early research in teaching PA (Elkonin, 1965; Seymour, 1970) took into account the need for children to first learn how to attend to the sounds that occurred naturally in their daily environment. Once children developed the ability to notice individual sounds upon demand, attending to individual sounds in words could be accomplished. Children were then able to hear and reproduce individual letter sounds, which lead to sounding out simple words. Teachers in early childhood preschool classrooms need to be aware of this step in PA and be able guide children in this process.

**Current Trends in Early Literacy Research**

In recent years, research in early childhood literacy at the preschool level has diversified and two terms have emerged for learning initial sounds in words, (i.e. phonemic awareness, phonological awareness). The choice of terminology varies between researchers, while the research methods discussed appear to include processes at the phonemic level.

Whitehurst and Lonigan (1998) viewed the concept of emergent literacy skills as occurring on a developmental continuum with at least two distinct domains: (a) inside-out skills and (b) outside-in skills. Inside-out skills were identified as phonemes at the sound level, and print units. Outside-in skills referred to those connected to contextual or narrative units and concepts at the semantic unit level, as well as products of the literacy environment. Both skills
were identified as important processes in effective reading, but inside-out skills were the most critical at the onset of learning to read.

Currently, the important critical skills often referred to as the *Big 5 Ideas* (Coyne et al., 2006), have been identified as: (1) phonemic awareness, (2) phonics, (3) fluency, (4) vocabulary, and (5) comprehension. Phonemic awareness skills include blending individual spoken sounds and segmentation of words into individual sounds. Phonics encompassed letter-sound correspondence (i.e., the sounds that correspond to letters, the letters that correspond to sounds). The authors divided phonics into two different skill levels that encompassed reading and spelling: (1) regular words in which each letter represented what was considered its common sound; and (2) advanced skill words, which included digraphs and open vowels in two-syllable words. The authors adopted Whitehurst and Lonigan’s (1998) concept that PA and phonics were code-based, inside-out skills.

Phonological sensitivity at the phoneme level appeared to be part of a bi-directional continuum of skills found within what Anthony et al. (2002) referred to as phonological ability. Two age groups were recruited for the study. The younger group was 109 preschool children between the ages of two and three. The older group contained 149 preschool children between the ages of four and five. Each group was assessed using 10 different phonological sensitivity measures: (1) rhyme oddity, (2) rhyme matching, (3) blending words, (4) elision words, (5) blending syllables, (6) elision syllables, (7) blending onset-rime, (8) elision onset-rime, (9) blending phonemes, and (10) elision phonemes. This use of a mixture of task and linguistic complexity resulted in indistinguishable phonological abilities that were dependent upon the child’s developmental level. Effective assessment required multiple phonological measurements
of abilities that covered task demands as well as linguistic complexity aligned closely with the developmental level of the child.

Anthony, Lonigan, Driscoll, Phillips, and Burgess (2003) tested the progression of the development of phonological skills in conjunction with task complexity. Subjects were 947 children with a mean age of 50.6 months (SD = 10.3), recruited from preschools and kindergartens. Intervention was structured so that phonological skills mastery followed the progression of word to syllable to onset-rime to phoneme awareness in tasks. The task complexity progressed from multiple choices to manipulation of individual phonological elements.

Phonological skills measurements included the assessment of three blending and three elision skills (Anthony et al., 2003). The complexity of the items was tested through four levels of linguistics that included word, syllable, onset-rime, and phoneme, using the four tasks of detection of blending and elision, then using blending and elision. Detection and elision at the word level were deemed too simple for this study. Pictures and a puppet were used to present the tasks.

Anthony et al. (2003) used hierarchical loglinear analysis (HLA) to evaluate the order in which phonological sensitivity skills were acquired within the linguistic and task complexity of the study because this method had no population distribution requirements. The tests of symmetry supported the expected progression of learning with two exceptions. First, children blended syllables before they blended words with non-picture items within complexity of task. Second, elision of phonemes occurred before elision of onsets for non-picture items. The authors attributed this result to an observation that children tended to use a strategy of saying only part of the stimulus words, much in the way children were instructed to do in Fox & Routh (1975).
Overall, the data supported the overlapping nature of phonological sensitivity, including phonemic awareness.

Lerner and Lonigan (2016) investigated the relationship between the elements of phonological awareness of word, syllable, onset-rime, and phoneme and letter knowledge as necessary precursors to competent reading skills. Subjects were 358 preschool children (mean age = 48.60 months, SD = 7.26) recruited from area preschools.

The phonological awareness factors of blending, elision, and rhyme were the operations applied to (1) words, (2) syllables and (3) phonemes. Other tasks completed multiple choice, rhyme oddity, and matching letters and sounds using real words and different formats. These operations were carried out at three different points in time approximately four months apart, beginning at the start of the school year.

The data were analyzed using secondary latent growth models. Findings suggested that exposure to letter-name and to letter-sound models was positively related to growth in phonological awareness for all measures except rhyme in both. The results also revealed a bi-directional relationship between initial letter-name knowledge and initial phonological awareness, which was not better explained by maturation or “the correlated development of letter-knowledge and phonological awareness” (Lerner & Lonigan, 2016, p. 178) and that it originated earlier in development than previously thought. Initial letter-sound knowledge and initial phonological awareness showed no unique association with phonological awareness development. Lerner and Lonigan (2016) surmised a shared predictive variance was responsible for this outcome.

The findings from this study (Lerner & Lonigan, 2016) suggested that growth in the skills of letter knowledge and PA shared a bi-directional influence on the growth of both skills, at the
sublevels of words, syllables, and onset-rime pairs in the growth rates of PA for children and was a replication and extension of previous studies. The lack of any influence being observed for letter-sound acquisition could have been a result of providing only eight items for this skill in the study.

Within the current research, phonological processing research was defined at levels of complexity, beginning with words then syllables to onset-rime and ending at the phoneme level (Anthony et al., 2002). Anthony et al. (2003) and Lerner and Lonigan (2016) have extended this line of research using very elegant research methodology. It represents a shift in perspective that is different from that reflected in the Survey of Teacher PhAKS (see Appendix A). The better teachers understand phonemic awareness, the more prepared they are to guide young children to and through developing effective literacy skills.

**Summary**

The research reviewed in this chapter supports the importance of teaching young children, at the earliest stage of children’s interest in words and reading and the seemingly simple concept that words are made up of single sounds. How that progress in a sequence.

Early childhood literacy has been an important part of national early childhood leadership organizations (IRA, 1998; NAEYC, 1998, 2009; DEC/NAEYC, 2009), as well as the National Literacy Panel (NICHHD, 2000) and the National Early Literacy Panel (2008). The skills necessary for successful readers were identified by the National Literacy Panel, dubbed the *Big 5 Ideas* by Coyne and colleagues (2006), and now provide the focus for reading instruction in the United States. Intensive research continues to be conducted in pursuit of the best formula for teaching PA (Anthony et al., 2002, 2003; Lonigan et al., 1998, 2009; Lerner & Lonigan, 2016).
At the same time, specific instruction in PA has been presented in early childhood education research (Goswami & Bryant, 1990; Hatcher et al., 2004; Lonigan et al., 2013).

Preschool teachers are being called upon to provide solid, research-based instruction that prepares 4-year old children to enter kindergarten ready to learn (Duncan, 2015, January 12). Early research at the phoneme level (Elkonin, 1965) supported an approach to developing reading skills that began at with training young children to develop the skill of attending to individual sounds in the environment (Goldstein, 2011; McGee & Ukrainetz, 2009; Seymour, 1970; Yopp, 1992).

Whitehurst and Lonigan (1998) categorized the beginning skills as being learned either from the inside to the outside or from the outside to the inside of words. Coyne et al. (2006) tested effective steps to be used for instruction to 4-year old children.

The current research in PA at the preschool level suggests that instruction assumes knowledge of the letters of the alphabet. Participants in research projects were presented whole words, then smaller portions of whole words until being trained to identify sounds of single letters (Anthony et al., 2002; Anthony et al. 2003; Lerner & Lonigan, 2016). However, little attention has been paid to the knowledge and skills early childhood educators have related to phonemic awareness. In order to implement these evidence-based practices within early childhood environments, it is essential that the performance levels of early childhood educators be understood. This study was designed to determine the knowledge and skills possessed by preschool teachers related to phonemic awareness. The Survey of Teacher PhAKS (see Appendix A) was used to elicit information about these knowledge and skills. The findings from this study can inform the literature on early childhood educators’ abilities to teach phonemic awareness to the children in their care.
CHAPTER THREE

METHODOLOGY

Young children need to enter kindergarten ready to learn to read (Duncan, 2015). To meet this expectation, children must receive explicit instruction in phonemic awareness (PA), the process of linking the sounds in words to letters of the alphabet (Hatcher, Hulme, & Snowling, 2004), and have code-based knowledge that promotes PA (Lonigan & Whitehurst, 1998). Early Childhood Education (ECE) and Early Childhood Special Education (ECSE) teachers must have well-developed knowledge of PA and instructional skills in order to teach PA to young children. This chapter describes the methods used to quantify the knowledge and skills of preschool teachers in Head Start and Community-based preschools.

This study was designed to assess the knowledge and skills that preschool teachers bring to early childhood preschool classroom settings. The survey instrument used for this study contained seven demographic questions followed by 14 multiple-choice questions. Each question contained four answer choices with the last choice being “I’m not sure.” The first 9 questions assessed the participant’s knowledge about PA; the last five assessed teaching skill. The purpose of this study was to compare differences in knowledge and skill related to education, experience, and type of early childhood education environment.

Research Questions

This study was designed to answer three primary research questions:

1. What level of knowledge and skills do preschool teachers possess in order to identify phonemic awareness instruction?

2. Is there a difference in the knowledge and skills of phonemic awareness between preschool teachers with different levels of experience or education?
3. Is there a difference in the level of knowledge, skills, and ability to distinguish between phonemic awareness and instruction for preschool teachers from Head Start community based preschool programs?

**Participants**

To increase the power of the design, at least 30 survey participants were required for a large enough effect size in an analysis of variance, ANOVA (Cohen, 1992). The participants of this study were 64 preschool teachers. From a pool of 124 total completed Head Start surveys, 32 were randomly selected. These scores were compared to 32 surveys completed by community-based preschool teachers.

A version of the *Survey of Teacher PhAKS* (see Appendix A) used for this study contained seven demographic questions (see Table 1, Appendix B) that provided contextual information about the sample. These questions were also used as the independent variables (IV) to analyze the responses to 14 knowledge and skill-based questions. The demographic information collected about the participant included (1) age, (2) gender, (3) number of years teaching, (4) highest level of education, (5) educational focus of the most current degree, (6) specific training in teaching phonemic awareness, and (7) curriculum used to support literacy in the classroom.

The participants were all females between the ages of 18 and 61+ years of age (see Table 1; Appendix B). Most of the teachers were between 31-40 years of age (n=30, 46.9%) with 9-15 years teaching experience (n=21, 32.8%) and a Bachelor's degree (n=21, 32.8%) in Early Childhood Education (n=27, 42.2%). The majority reported no specific training in PA (n=35, 54.7%).
Setting

Initially, there were two settings used for recruiting participants for this survey. The first was at a face-to-face meeting with Head Start teachers attending a monthly training meeting for all teachers in the local area, with permission from the local Head Start organization (see Appendix E). Paper and pencil surveys were taken to this meeting, and the researcher described the purpose of the study and asked the Head Start teachers to participate.

Due to difficulties in identifying a similar setting to present to community-based preschool teachers, a list of contacts with email addresses for local preschools was obtained from a non-profit organization that worked closely with preschools. An electronic survey version of the Survey of Teacher PhAKS (see Appendix A) and an Informed Consent (see Appendix C) were sent to 228 email addresses using an online survey software program (Qualtrics, 2016). The survey was sent a second time to the contacts on the email list two weeks later. The two attempts to obtain responses from community-based preschool teachers netted 11 survey responses over a one-month period. An opportunity to present the survey in a face-to-face meeting with community-based preschool teachers was later identified and 21 teachers completed the survey during that meeting.

Instrumentation

An exploratory research design was used to determine the current levels of knowledge and skills of preschool teachers, as well as to compare any differences in these levels between different types of teachers. A validated instrument, the Survey of Teacher PhAKS (Cheesman et al., 2009; see Appendix A), was used with permission from the lead author (see Appendix D).

The knowledge and skill based instrument contained 15 multiple-choice questions. The first nine questions of the survey related to (a) PA knowledge, and well as teachers’
understanding of definitions and content for instructional purposes; (b) identification of instructional activities related to the development of phonemic awareness; (c) understanding of task difficulty; and (d) identifying the type of students who benefit from PA instruction. One of the possible responses on questions 1 through 6 contained a phonics response as a possible answer that was used to determine if participants could identify the difference between PA and phonics instruction. Questions 10 through 15 were intended to measure the skills teachers possessed at the phoneme level (i.e. identifying, matching, and counting individual sounds).

The procedures Cheesman et al. (2009) used for validating the original Survey of Teacher PhAKS included three steps. The initial survey contained 25 items. Seventeen people the authors considered experts in PA instruction validated that version of the survey. Some had expertise in providing PA instruction to children, others taught PA in professional development to teachers, while others were responsible for setting teacher standards at the state level. Based upon the feedback from this initial group, the survey was reduced to 16 questions. A pilot study using this version was conducted using 127 students who were enrolled in graduate-level teacher preparation programs as either pre-service or in-service teachers. As with the formal survey, the participants volunteered, and all responses were strictly anonymous. The final 15-item survey was developed based upon the pilot study results. Because of the intentional brevity of the Survey of Teacher PhAKS, based upon a Spearman-Brown Formula, the reliability of the questions was estimated at .82 (Cheesman et al., 2009).

The completed surveys for this study were hand scored by the investigator. Correct answers were circled using a contrasting ink color to the one used by participants when completing the survey. There were three possible correct choices with the fourth choice of “I’m not sure.” Correct, incorrect and “I’m not sure” were tallied for each survey. A clerical error
occurred with the online survey that resulted in Question 15 being eliminated from analysis. The final total of possible correct answers for the knowledge-based questions was nine, and five for the skill-based questions, for a total of 14 possible correct responses.

**Procedures**

Access to the participants of interest for this study was different for each group (i.e., Head Start, community-based preschools). An independent contractor managed the Head Start schools in the large metropolitan area of the southwest where this survey was conducted. Community-based preschools were generally independently operated, essentially eliminating face-to-face meetings as a viable option for that population. It was decided that contacting the teachers in these facilities would be best accomplished through an electronic survey sent via email.

**Paper and Pencil Version**

A paper and pencil version of the *Survey of Teacher PhAKS* (see Appendix A), along with the Informed Consent document (see Appendix B) was presented to teachers from the local Head Start program at a face-to-face session. A presentation was made (see Appendix E) that provided participants with information regarding: (a) the purpose of the study, (b) the importance of their responses in the future research and development of meaningful curricula for early childhood classrooms, (c) an estimated time to complete the survey, (d) the steps being taken to ensure the anonymity of their responses, and (f) the procedures to follow if they chose not to participate. The participants were invited to ask questions regarding the survey and the study.

A survey packet containing the Informed Consent document (see Appendix B) and a copy of the *Survey of Teacher PhAKS* (see Appendix A) was presented to participants, along with instructions to read the Informed Consent form to solicit voluntary participation before
beginning the survey. Those teachers who did not wish to participate were asked to return the
survey packet to the researcher. As the surveys were completed, participants were asked to
remove the first page, the Informed Consent description (see Appendix B) for their own records.
The consent signature page (see pg. 2 of the Informed Consent, Appendix B) was returned by
each participant to the researcher. The signed consent page was removed and placed in one box
and the completed survey in a second box. This format resulted in 124 completed surveys.

After a limited number of online surveys were completed, the researcher determined it
was necessary to modify procedures and attempt to collect information at a face-to-face meeting
of community-based preschools. The survey was presented to community-based preschool
teachers at a training session offered by the state's Department of Education. Due to time
constraints, the survey was distributed to the participants as they entered the meeting room with
verbal instructions for completing it. Once all participants had arrived, the same short
presentation regarding the purpose of the survey and the significance of their participation (as
described in the previous paragraph) was presented. The trainer allowed the majority of the
group time to complete the survey before beginning the training presentation. All 21 of the
teachers in attendance signed the consent form and completed the survey.

Electronic Survey Version

Electronic surveys were made available in an online format (see Appendix A; Qualtrics,
2016) and sent in an email message to 228 community-based preschools, identified from a list of
area preschools obtained from a local non-profit organization that provides information and
services to children and families in need. The first page of the electronic survey contained the
Informed Consent form (see Appendix C). Participants were required to click the Yes icon next
to the statement of consent before being allowed to access the introduction to the survey.
Clicking the *No* icon directed the participant to a page thanking them for their time. The introduction provided information regarding the procedures for completing the survey, along with a brief statement about the purpose of the survey. Clicking the continue button began the *Survey of Teacher PhAKS* (see Appendix A). The first seven questions requested demographic information, followed by nine knowledge-based and five skills-based questions. When participants completed all of the questions, they were taken to a message thanking them for their participation, with a button to exit the survey. The survey was resent to the entire list two weeks following the first mailing. The total number of completed surveys obtained from the online presentation was 11.

**Procedures for Reliability**

The responses to questions 1-14 from all completed paper surveys from the community-based preschool meeting and the Head Start meeting (see Appendix A) were entered into an Excel spreadsheet by the researcher. Data from the electronically completed surveys were downloaded into an Excel file and compiled with the data from the paper-and-pencil completed surveys. The input of the data was validated by a doctoral student with no connection to the project. The reliability of the data was 91%, which met the threshold of reliability of 90%.

**Treatment of Data**

The dependent variable for this study was the number of correct responses participants provided when completing the *Survey of Teacher PhAKS* (see Appendix A). Data from these responses were used in a variety of ways to best answer the research questions posed for this study.

**Research Question 1:** What level of knowledge and skills do preschool teachers possess in order to identify phonemic awareness instruction?
Analysis: In order to determine the level of knowledge and skills preschool teachers had to teach phonemic awareness to young children, descriptive statistics were obtained using the mean of the correct responses to questions 1-14 of the Survey of Teacher PhAKS. These descriptive statistics were used to provide a baseline regarding the knowledge and skills early childhood education teachers had related to phonemic awareness instruction. These data provided important information about the current knowledge and skills of early childhood education teachers for a variety of demographic groups.

Research Question 2: Is there a difference in the knowledge and skills of phonemic awareness between preschool teachers with different levels of experience or education?

Analysis: In order to determine if preschool teachers’ experience and knowledge of phonemic awareness prepared the teacher to distinguish between phonemic awareness and phonics instruction, teachers’ level of education and years of experience were compared to the total number of correct responses using a series of four one-way ANOVAs (i.e., years of experience and knowledge score, years of experience and skills score, level of education and knowledge score, level of education and skills score). An alpha of .05 was set.

Research Question 3: Is there a difference in the level of knowledge, skills, and ability to distinguish between phonemic awareness and phonics instruction for preschool teachers from Head Start and Community-based programs?

Analysis: In order to determine if there is a difference in the level of knowledge, skills and ability to distinguish between phonemic awareness and phonics instruction for preschool teachers from Head Start and Community-based preschools, two independent t-tests were used for analysis (i.e., placement and knowledge score, placement and skills score). An alpha of .05 was set (see Table 3).
CHAPTER 4

RESULTS

Improving the connection between what children learn in preschool and what they need to learn in elementary school (NAEYC, 2009; NELP, 2008) is important to the current national educational agenda (Duncan, 2015). Developmentally appropriate practices for teaching reading to young children were formally identified by the NAEYC and the International Literacy Association (IRA, 1998), and included phonemic awareness as a key component. When young children gain important literacy skills in preschool, such as PA, their chances of mastering the critical skill of reading improve significantly (Francis et al., 1996; Johnston & Watson, 2004).

Learning to read is very complex, both for the student learning and the teacher teaching. In an early childhood setting, guiding children to actively build meaning from letters and the sounds they make (Neuman & Roskos, 2005) requires a firm understanding of the specific elements involved in teaching PA.

While preschool teacher’s knowledge and skills have been surveyed within public school settings (Cheesman et al. 2009), there is a paucity of research that specifically quantifies the PA knowledge and skills of Head Start and community-based preschool teachers. As the enrollment of children in Head Start and community-based preschools grows (Duncan, 2015) it is important to understand the level of knowledge and skills that teachers in these environments have about this critical early literacy skill. The purpose of this study was to begin to determine the awareness professionals in these settings have about phonemic awareness.

Preschool teachers for Head Start and community-based preschools were selected to complete the knowledge and skills assessment instrument, Survey of Teacher Ph.AKS, (see Appendix A) in two face-to-face meetings and through an online survey (Qualtrics, 2016). The
completed surveys contained 14 knowledge-based questions related to knowledge and skills of phonemic awareness. The first nine items were designed to assess teacher knowledge, with the last five questions designed to assess the skills teachers possess to teach PA.

Teachers working in Head Start preschools completed a paper version of the survey instrument in a face-to-face monthly training meeting. There were 124 completed surveys submitted by this group. Community-based preschool teachers were initially recruited to complete an online version of the Survey of Teacher PhAKS (see Appendix A) using an email list provided by a local non-profit organization. The online version netted 11 responses. Subsequently, an arrangement was made to present the survey instrument at a face-to-face training meeting hosted by the state Office of Early Learning and Development located in the state where the research took place. The instrument was competed by all 21 participants present at the meeting, for a total of 32 responses. In order to obtain statistically valid information, 32 completed surveys were randomly selected from Head Start and were compared to 32 paper and pencil and electronically submitted surveys from community-based preschool teachers.

**Level of Knowledge and Skills of Preschool Teachers Related to Phonemic Awareness**

The Survey of Teacher PhAKS (see Appendix A) began with questions designed to determine the level of knowledge participants possessed specific to PA. The first four questions assessed the respondents’ ability to: (1) define a phoneme, (2) define phonemic awareness, (3) identify the most effective method for teaching phonemic awareness, and (4) choose an effective lesson to begin teaching PA. Questions 5 through 8 required respondents to choose activities and instructional methods to support PA, and question 9 asked who the respondent thought should be taught the knowledge and skills. Questions 10 through 12 assessed the skill of recognizing phonemes in written words, while questions 13 and 14 assessed counting phonemes in words that
also contained consonant blends. Overall, community-based preschool teachers answered more questions correctly compared to Head Start teachers. Question 8, which related to the task requiring the most refined PA, had the least correct answers by both groups. Question 10, the only yes or no question, also had the most correct responses by both groups.

**Research Question 1:** What level of knowledge and skills do preschool teachers possess about phonemic awareness?

To determine the level of knowledge and skills preschool teachers possess to teach phonemic awareness to young children, the means of the sample were compared. The range of correct responses to questions 1-14 of the *Survey of Teacher PhAKS* (see Appendix A) for community-based teachers was 0-10 and for Head Start teachers, it was 0 to 11 (see Table 2, Appendix B).

Community-based preschool teachers (M = 5.19, SD = 2.55) and Head Start teachers (M = 5.00, SD = 2.63) scored essentially the same overall (see Table 2, Appendix B) when answering questions on the *Survey of Teacher PhAKS* (see Appendix A). Head Start teachers got slightly more answers correct (M = 3.25, SD = 1.89) on the knowledge questions 1 through 9, while Community-based teachers scored slightly higher (M = 2.09, SD = 1.75) on the skills questions 10 through 14.

When compared by years of teaching experience (see Table 2, Appendix B), teachers having 16-20 years’ experience scored the highest (M = 5.57, SD = .98), followed by teachers having 21 or more years of experience (M = 5.00, SD = 2.33). The lowest scores were those who had been on the job 4 to 8 years (M = 4.70, SD = 2.16) followed by those with 0 to 3 years’ experience (M = 4.72, SD = 3.29).
Teachers with a Bachelor of Science degree scored the highest (M = 7.40, SD = 2.72), followed by those holding a Masters of Education degree (M = 6.43 SD = 2.51). Teachers with a High School Diploma (M = 4.94, SD = 2.74) scored slightly higher than those with a Bachelor of Arts degree (M = 4.73, SD = 1.68; see Table 2, Appendix B). The lowest scoring group was those with an Associate’s degree (M = 3.80, SD = 1.91).

Having specific training in PA knowledge and skills had an impact on the correct number of answers (see Table 2, Appendix B). The group who had received specific training scored higher (M = 6.07, SD = 2.63) than those who received no training (M = 4.29, SD = 2.24).

**Research Question 2:** Do preschool teachers’ experience and education prepare them to identify phonemic awareness instruction?

**Analysis:** To determine if preschool teachers’ experience teaching in an early childhood setting or educational background had a specific impact on their knowledge and skills related to phonemic awareness, a series of one-way analysis of variance (ANOVA) tests were conducted with years of experience and education level as independent variables and knowledge score and skills score as dependent variables. There was no significant difference between participants’ years of experience and their score on the knowledge assessment (F (4, 59) = 1.043, p = 0.393) (see Table 3, Appendix B) nor their score on the skills assessment (F (4, 59) = 1.334, p = 0.268; see Table 4, Appendix B).
Table 3

Tests of Between Group Effects for Knowledge Correct for Head Start and Community-based Preschool Teachers

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>15.522</td>
<td>4</td>
<td>3.881</td>
<td>1.043</td>
<td>.393</td>
</tr>
<tr>
<td>Within Groups</td>
<td>219.587</td>
<td>59</td>
<td>3.722</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>235.109</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. p < .05.

Table 4

Tests of Between Group Effects for Skill Correct for Head Start and Community-based Preschool Teachers

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>8.343</td>
<td>4</td>
<td>2.086</td>
<td>1.334</td>
<td>.268</td>
</tr>
<tr>
<td>Within Groups</td>
<td>92.267</td>
<td>59</td>
<td>1.564</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.609</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. p < .05.

When comparing knowledge scores among levels of education, a significant difference was found \( F (4, 59) = 4.054, p = 0.006; \) see Table 5, Appendix B). Tukey post-hoc comparison revealed a statistically significant difference in the knowledge score of participants with a Bachelor of Science degree compare to those with an Associate’s degree \( p = 0.003 \), with participants having a Bachelor of Science degree scoring higher than those with an Associate’s
degree (see Table 6, Appendix B). No other differences were found between levels of education. When comparing skills scores among levels of education, there was no significant difference among levels of education \((F (4, 59) = 2.516, p = 0.051; \text{see Table 7, Appendix B})\) although the statistic approached significance.

Table 5

*Tests of Between Group Effects for Education and Knowledge of Head Start and Community-based Preschool Teachers*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>50.687</td>
<td>4</td>
<td>12.672</td>
<td>4.054</td>
<td>.006</td>
</tr>
<tr>
<td>Within Groups</td>
<td>184.422</td>
<td>59</td>
<td>3.126</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>235.109</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* \(p < .05.\)

Table 7

*Tests of Between Group Effects for Education and Skill of Head Start and Community-based Preschool Teachers*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>14.663</td>
<td>4</td>
<td>3.666</td>
<td>2.516</td>
<td>.051</td>
</tr>
<tr>
<td>Within Groups</td>
<td>85.946</td>
<td>59</td>
<td>1.457</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.609</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* \(p < .05.\)
**Research Question 3:** Is there a difference in the level of knowledge, skills, and ability to distinguish between phonemic awareness and phonics instruction for preschool teachers from Head Start and Community-based programs?

**Analysis:** In order to determine if there is a difference in the level of knowledge and skills to distinguish between phonemic awareness and phonics instruction for preschool teachers from Head Start and Community-based preschools, two independent sample t-tests were completed to determine if there were any differences on the knowledge and skills score of teachers in these two placements. An alpha of .05 was set (see Table 8 and Table 9, Appendix B). There was no significant difference on the knowledge scores between teachers at Head Start (M = 3.25, SD = 2.00) and community-based preschool teachers (M = 3.09, SD =1.89); t(62) = -.321, p = 1.000. There was also no significant difference on the skills score between teachers at Head Start (M = 1.75, SD = 1.24) and community-based preschool teachers (M = 2.09, SD = 1.29; t(62) = 1.09, p = 0.962. (see Table 8 and Table 9, Appendix B).

Table 8

*Mean Scores of Teachers in Different Early Childhood Education Placements*

<table>
<thead>
<tr>
<th>Placement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Correct (DV)</td>
<td>Community-Based</td>
<td>32</td>
<td>3.09</td>
<td>1.890</td>
</tr>
<tr>
<td></td>
<td>Head Start</td>
<td>32</td>
<td>3.25</td>
<td>2.000</td>
</tr>
<tr>
<td>Skill Correct (DV)</td>
<td>Community-Based</td>
<td>32</td>
<td>2.09</td>
<td>1.279</td>
</tr>
<tr>
<td></td>
<td>Head Start</td>
<td>32</td>
<td>1.75</td>
<td>1.244</td>
</tr>
</tbody>
</table>
Table 9

Independent *t*-test Comparing Different Early Childhood Education Placements

<table>
<thead>
<tr>
<th></th>
<th>t</th>
<th>df</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Correct</td>
<td>-.321</td>
<td>62</td>
<td>.749</td>
</tr>
<tr>
<td>Skill Correct</td>
<td>1.090</td>
<td>62</td>
<td>.280</td>
</tr>
</tbody>
</table>
CHAPTER 5
DISCUSSION

Early reading researchers (Elkonin, 1963; Seymour, 1970) recognized that the first step in learning to read was the development of children's abilities to attend to individual sounds in their world before being taught to listen for and identify individual sounds in words (i.e., phonemic awareness). Children at risk for reading failure require direct, explicit instruction in PA and the process of linking phonemes with letters (Hatcher et al., 2004).

Young children require teachers with an effective working knowledge of early literacy skills and of developmentally appropriate instructional methods (NAEYC, 2009). Professional development for early childhood educators is needed to teach these foundational literacy skills to young children (National Board for Professional Teaching Standards, 2002; DeBruin-Parecki & Slutzky, 2016). Teachers who receive professional development aimed at the implementation of standards-based teaching are better prepared to provide evidence-based instruction (DeBruin-Parecki & Slutzky, 2016), including instruction related to PA, to preschool children. Since a significant number of four-year-old children receive their first educational services in Head Start and community-based preschools (NAEYC, 2009; The Children's Cabinet, 2015), it is important to know the level of PA knowledge and skills teachers have in these settings.

This study was designed to determine the current knowledge and skills early childhood educators have related to phonemic awareness, and to determine if any differences existed between teachers regarding education, experience, and work placement. The Survey of Teacher PhAKS (see Appendix A) was presented to Head Start teachers during a monthly training session, and to a group of community-based preschool teachers attending a similar training session offered by the state Department of Early Learning and Development. The participants in
both sessions completed a paper-and-pencil version of the knowledge-based instrument. A total of 124 completed surveys were obtained from Head Start teachers and 21 from community-based preschool teachers. Additionally, an electronic copy of the survey was sent through email to 224 preschools, using an email list maintained by a local non-profit organization. Eleven completed surveys were obtained using this method of distribution. Since there was a large difference in completion rates for each type of early childhood education placement, a random sampling of completed surveys was obtained from the pool of completed surveys: 32 from community-based preschool teacher responses, and 32 from Head Start teacher responses.

**Teacher Knowledge and Skills of Phonemic Awareness**

The *Survey of Teacher PhAKS* (see Appendix A) contained 14 multiple-choice questions that explored the participants’ PA knowledge and skills with: (a) definitions, (b) effective teaching methods, (c) instructional activities, and (d) skills in recognizing and counting phonemes in words.

**Early Childhood Educators' Current Level of Knowledge and Skills Related to Phonemic Awareness**

Based upon descriptive analysis, early childhood educators currently have limited knowledge and skills related to phonemic awareness. Community-based preschool teachers (M = 5.19/14.00, SD = 2.55) and Head Start teachers (M = 5.00/14.00, SD = 2.63) averaged the same low number of correct responses. Further analysis of correct and incorrect responses to the questions in the survey instrument was used to better understand the current level of knowledge and skills of early childhood educators. The first six questions contained answer choices that defined phonics rather than phonemic awareness, (i.e., phonics foil responses) as a way to further evaluate teacher's knowledge.
Review of Knowledge-based Questions

Question 1 (see Table 10, Appendix B) assessed teacher understanding of the specific definition of the word *phoneme* as part of early literacy development (Roskos, Christie, & Richgels, 2003), and as a precursor to learning to read. Elkonin (1963) and Seymour (1970) taught children the skill of attending to specific sounds in their environment to prepare them to listen for specific sounds in words. To accomplish this, preschool teachers must understand that a phoneme is the smallest part of the *spoken* word. Analysis of the responses to this question revealed that 43.75% of community-based preschool teachers and 56.25% of Head Start teachers understood this definition. Most community-based preschool teachers (28.13%) were not sure of this definition. For Head Start teachers 18.75% chose the phonics foil response, which contained the word *written* (see *Survey of Teacher PhAKS*, Appendix A).

Question 2 assessed teachers’ understanding of PA as the ability to hear and to manipulate the individual sounds of letters, a skill that requires young children to develop the ability to “analyze or manipulate units of speech, outside of applying meaning” (Yopp, 1992). This question was more difficult for community-based teachers (28.12% answered correctly) than for Head Start teachers (40.62% chose the correct answer; see Table 10, Appendix B). Community-based teachers primarily chose the second phonics foil answer (46.88%), as did most of the Head Start teachers (43.75%).

Question 3 was written to assess teachers’ understanding of the specific instruction required to teach PA to preschool children (Cheesman et al., 2009). The correct response was the one that did not mention the alphabet, but did contain the words *sound* and *spoken* (see *Survey of Teacher PhAKS*, Appendix A). Fifty percent of community-based teachers and 40.62% of Head Start teachers selected the correct answer. The phonics foil answer was chosen
by 21.88% of community-based teachers. Head Start teachers chose the phonics foil question 50% of the time.

Yopp (1992) suggested that phonemic awareness was “both a prerequisite to and a consequence of learning to read” (p. 697). Seymour (1970) supported pre-teaching the learning skill needed by students to effectively access PA instruction (i.e., that of identifying sounds in the environment prior to introducing sounds in words). Question 4 assessed the respondents understanding that the first lesson when teaching PA should be identifying sounds shared among words. Correct responses were lower for both community-based teachers (25%) and Head Start teachers (15.63%). The phonics foil question was chosen by 53.13% of community-based teachers, and by 65.63% of Head Start teachers.

Question 5 was used to assess teacher knowledge of more advanced PA instruction for students who had mastered the basic skills and were ready for more explicit instruction. Community-based teachers demonstrated more knowledge at this level; 37.50% answered correctly as compared to 18.75% of Head Start teachers. Community-based teachers (21.88%) and Head Start teachers (43.75%) incorrectly chose counting the syllables in *hotdog*.

Question 6 asked the participants to identify an example of explicit PA instruction. The correct response required the reader to focus upon the primary attribute of PA instruction (i.e., sound, as opposed to reading words or teaching letter-sound correspondences). Twenty-five percent of community-based teachers chose the correct response, while 12.50% of Head Start teachers responded correctly. Both community-based (28.13%) and Head Start (37.50%) incorrectly chose the answer that referred to reading words in the same word family.

From question 7 forward, there were no phonics foil questions. Question 7 asked teachers to identify an activity explicitly linking spelling and phonemic awareness. The correct
response was selected by 59.38% of Head Start teachers; however, just 28.13% of community-based preschool teachers selected the correct answer. While the beginning of the correct answer is to say a word then tap out the sounds, writing the word is not expected at the PA level of instruction. This question does not technically apply to phonemic awareness because spelling and writing require training in the alphabet (Hatcher et al., 2004).

Question 8 required the selection of a more refined PA task. The choice was to identify the first sound in *sled*, the first sound in *shed*, or that the two tasks were the same. This question garnered the lowest scores for both groups (i.e. 6.25% for community-based and 9.36% for Head Start teachers). Both groups (community-based = 40.62% and Head Start = 34.36%) thought the tasks were the same.

Question 9 asked participants to complete a statement regarding PA and who would benefit the most. Most teachers answered this question correctly with 71.75% of community-based teachers and 68.75% of Head Start teachers giving correct responses. In both groups, most of those who missed this were not sure of the correct response.

**Review of Responses to Skill-based Questions**

The skill-based questions included in *Survey of Teacher PhAKS* (see Appendix A) assessed participants’ skills in identifying and matching phonemes in words, including those with consonant blends. Appropriate PA skills include word comparison, rhyming, sound discrimination, and phonemic segmentation (University of Oregon Center on Teaching and Learning, 2009).

Question 10 assessed teachers’ ability to recognize the PA skill of rhyming using the response choices of *yes, no*, or choosing three out of the four target words (*shoe, do, flew*, and *you*). Teachers from both settings were relatively successful in answering this question: 68.8%
of community-based teachers and 75.0% of Head Start teachers correctly responded yes. Six (18.75%) community-based teachers and five (15.63%) Head Start teachers incorrectly selected the third response identified above.

Question 11 presented more of a challenge for both groups. This question required choosing the two words with the same final sound, the answer of which was please and buzz; 31.25% of community-based and 25% of Head Start teachers chose this response. In both groups, the other teachers primarily chose the words house-hose (community-based = 37.50%; Head Start = 59.38%).

Question 12 required respondents to choose the list of three words with a common vowel sound. The correct response contained the words son, blood, and touch, and was selected by 43.75% of community-based, and 25% of Head Start teachers. Both community-based (59.38%) and Head Start (56.25%) chose the incorrect response of paid, said, maid.

Question 13 assessed teacher’s understanding of phonemic segmentation skills in a question asking the number of separate sounds in the word grape. Community-based teachers chose the correct response 31.25% while Head Start teachers chose it 18.75%. Many participants in both groups chose five syllables: 53.13% of community-based and 65.63% of Head Start teachers.

Question 14 required the identification of the systematic sequence being used to count sounds from easy to complex. Approximately 31% of Head Start teachers and 34% of community-based teachers identified the words ape, lake, and break; the correct sequence. Approximately 65.62% of community-based teachers incorrectly responded with the responses being somewhat evenly split between the other three choices (i.e., hop, shop, shops; toe, bow,
Head Start teachers chose the incorrect answer 68.75% of the time, but this group primarily chose *hop, shop, shops*.

The highest percentage of correct responses for any one question (see Table 10; Appendix B) on the *Survey of Teacher PhAKS* (see Appendix A) was Question 9 (community-based: 71.75% and Head Start: 68.75%). The lowest percentage correct was on Question 8, (community-based: 6.25%, and Head Start: 9.36%), which asked respondents to identify the “more refined” PA task. Overall, when looking at the average percentage of correct answers for each group, community-based preschool teachers averaged 35.28% correct and Head Start teachers averaged 35.49% correct. Teachers in both settings demonstrated a very low level of knowledge about teaching phonemic awareness.

The level of knowledge and skills demonstrated by this analysis of responses indicates that preschool teachers in both community-based and Head Start preschools require more effective training in PA. For many years preschool education has not been considered part public education (NAEYC, 2009). Preschool programs, instructional practices, and teacher credentials varied widely. They were primarily viewed as child-care options rather than educational choices. Currently, there is much more accountability in public schools at the kindergarten level that presupposes children gaining more academic knowledge in preschool. Head Start and many community-based programs receive federal funding, and are required to coordinate preschool education to support young children coming to kindergarten prepared to meet the higher educational expectations in public schools. Because of the increase in accountability, more education and professional development will be necessary to support teacher growth in all areas of early childhood education including literacy (NAEYC, 2009).
Differences in Level of Education and Years of Experience Regarding Phonemic Awareness Knowledge and Skills

The second research question was used to compare years of teaching experience in teaching PA and the level of education of the participants and their ability to distinguish between phonemic awareness and phonics instructions. The results of a series of one-way analysis of variance (ANOVA) tests revealed no significance difference between knowledge correct \( p = 0.393 \) (see Table 3, Appendix B) and skills correct for years of experience \( p = 0.268 \) (see Table 4, Appendix B) for participants. These results indicate that years of experience do not necessarily have an impact on the level of knowledge and skills held by early childhood educators. A recent analysis of studies on teacher effectiveness and years of experience (National Center for Analysis of Longitudinal Data in Education Research, 2010) revealed that teachers are the most productive during the first few years of teaching and that there is not much difference between a teacher with five years of experience than one with twenty.

Subsequently, a statistically significantly difference in the knowledge score of participants with a Bachelor of Science degree and those with an Associate’s degree, \( p = 0.003 \) (see Table 6, Appendix B) was identified when a Tukey post-hoc comparison was conducted. The implication of this interaction difference may be that Bachelor’s degree training programs are better preparing early childhood education teachers to deliver PA instruction to young children. Further exploration should focus on the specific curricula being used to train early literacy skills at a variety of levels of education, and to identify evidence-based practices for supporting teachers in the development of these critical teaching skills. Although significance was not reached when skills were compared to level of education \( p = 0.51 \), it did approach
significance (see Table 7, Appendix B). Overall, level of education has an influence on both knowledge and skills.

The third research question was used to identify any difference in knowledge and skills related to phonemic awareness between teachers in community-based preschools and those in Head Start programs. Two independent sample t-tests were used to answer this question (with an alpha of .05). There was no significant difference on the knowledge scores between teachers at Head Start and community-based preschool teachers \((p = 1.000)\). There was also no significant difference on skills scores between Head Start and community-based preschool teachers \((p = 0.962)\). These results indicate that the development of programs aimed at increasing teacher knowledge and skills about phonemic awareness would be of great benefit to teachers in both Head Start and community-based preschools.

Significant research (Anthony et al., 2002; Elkonin, 1963; Fox & Routh, 1975; Juel et al., 1986) has shown the important part PA has in the development of reading ability in young children. The results of this study indicate that early childhood education professionals may need more training and support related to the development of PA knowledge and skills in providing good instruction to preschool children. Research into effective teacher education programs that support PA and its significance as a foundational skill of reading is indicated.

**Limitations**

1. Because of a clerical error on the electronic survey, this version of *Survey of Teacher PhAKS* (Cheesman et al., 2009; see Appendix A) contained 14 survey questions, whereas the original contained 15 survey questions. Since the original survey tool was validated using 15 questions, this error may impact the validity of the tool used in this study.
2. The sample size used for analysis within this study was small. The number of completed surveys for this study makes it difficult to draw any definitive conclusions regarding the knowledge and skills of community-based and Head Start preschool teachers' ability to support effective PA instruction.

3. The survey was distributed using two methods (i.e., paper-and-pencil at a Head Start staff meeting and a community-based preschool training session, and an online distribution for community-based early childhood settings). These different methods could have influenced survey completion rates.

4. Teachers were not actually observed providing instruction.

**Conclusion**

There are six conclusions that can be drawn from the outcome of this study. These conclusions are based on the quantitative data that were collected and must be viewed with consideration of the limitations of the study.

1. The teaching of foundational skills, including PA, in preschool have come to be a necessary part preschool education in support of more rigorous kindergarten essential skill standards. Teachers in community-based and Head Start preschools require teacher preparation programs based on the current research concerning PA.

2. Within the categories of years of teaching experience, level of education, and degree held, the second most frequent years of teaching experience were those with 0-3 years (n=18, 28.12%; see Table 1, Appendix B).

3. Participants with a Bachelor's degree scored significantly higher than those with an Associate's degree. This could indicate that higher levels of education provide more
training related to phonemic awareness. However, there was no significant difference in any other degree levels so this conclusion would have to be explored.

4. There was no significant difference in phonemic awareness knowledge and skills of participants with different levels of experience (i.e., 0-3, 4-8, 9-15, 16-20, 21 or more).

5. There was no significant difference in the phonemic awareness knowledge and skills of participants at different placement sites (i.e., Head Start, community-based preschools).

6. Overall, the mean of correct scores on measures of phonemic awareness knowledge and skills was relatively low for all participants in the study. This, paired with lack of significance in the scores of different categories of teachers, could indicate that there is limited preparation for teaching phonemic awareness in early childhood education preparation programs. However, this would need to be explored further.

**Recommendations for Future Research**

The outcomes presented in this study highlight the need for teacher preparation programs that provide effective instruction in phonemic awareness.

1. Replication of the present study with a larger sample size to see if these findings are supported with a higher number of participants.

2. Analysis of the results of the present study through the lens of the phonics foil responses to determine if these have any impact on the outcomes reported in this study.

3. Analysis of the results of the present study through the lens of phonemic awareness training to determine if there is any relationship between knowledge and skills of phonemic awareness and professional development activities.
4. Development and implementation of a targeted professional development related to critical phonemic awareness skills and the impact this professional development has on early childhood educator knowledge and skills, as well as correlating classroom practice.

5. Longitudinal study on the impact of targeted phonemic awareness intervention on the early literacy skills of children.

6. Analysis of early childhood education preservice curricula to determine the extent to which phonemic awareness skills are included in the training of these professionals.

7. Analysis of the critical aspects of phonemic awareness that should be included in professional development and early childhood education preparation curricula.

8. Analysis of the most effective techniques for teaching phonemic awareness and their integration into early childhood education environments.

9. Develop a mixed methods research study that allows triangulation of the knowledge and skills of preschool teachers in these two settings.

Summary

This study contributes to the research base because it appears to be one of the first studies designed to assess the knowledge and skills that Head Start and community-based preschool teachers bring to the education of a large population of preschool children in the United States. The survey that was used for the study, *Survey of Teacher PhAKS* (Cheesman et al., 2009; see Appendix A), was developed using first year teachers who were teaching in public schools. A search of databases netted a paucity of research in PA in community-based preschool settings and limited research in Head Start settings. More research is needed with more participants to obtain reliable results about the knowledge and skills of preschool teachers about PA. Several avenues of study were identified that have the potential to support the expansion of training for
preservice teachers, and professional development for those teaching in a variety of preschool settings.
APPENDIX A

SURVEY OF PRESCHOOL TEACHERS P/PhAKS
Survey of Teacher PhAKS (Answer Key)

1. My age is in the following range of years:
   a. 20-30
   b. 31-40
   c. 41-50
   d. 51-60
   e. 61 or more

2. My gender is
   a. Female
   b. Male

3. I have taught preschool for the following number of years:
   a. 0-3
   b. 4-8
   c. 9-15
   d. 16-20
   e. 21 or more

4. My highest level of education is:
   a. B. S.
   b. B. A.
   c. M. Ed.
   d. Ed. S.
   e. Ph. D./Ed. D.
5. My most current degree is in:
   a. Education
   b. Early Childhood Education
   c. Special Education
   d. Non-education field of study

6. I use the following curriculum to support literacy instruction in my classroom:
   a. HighScope Curriculum
   b. Creative Curriculum
   c. Curiosity Corner (Success for All)
   d. Imagine It
   e. Other
      i. Name: ____________________________

7. I have had specific training in teaching the concepts of PA and phonics:
   a. Yes, in both PA and phonics
   b. Yes, but only PA concepts
   c. Yes, but only phonics concepts
   d. No specific training in either PA or phonics
Survey Questions

1. A phoneme is:
   a. the smallest part of written language
   b. **the smallest part of spoken language**
   c. a word part that contains a vowel sound
   d. I’m not sure

2. Phonemic awareness is:
   a. the same thing as phonics
   b. understanding the relationships between letters and the sounds they represent
   c. **the ability to identify and work with the individual sounds in spoken words**
   d. I’m not sure

3. Effective phonemic awareness instruction teaches children to:
   a. convert letters or letter combinations into sounds.
   b. **notice, think about, and work with sounds in spoken language**
   c. discriminate one letter from the other letters in the alphabet
   d. I’m not sure

4. The student’s first lessons in phonemic awareness involve:
   a. learning letter-sound relationships
   b. matching spoken words with printed words
   c. **identifying sounds shared among words**
   d. I’m not sure
5. A student has broad phonological awareness and now needs explicit phonemic awareness instruction. What type of activity focuses on phonemic awareness skills?
   a. Color the pictures that begin with the letter b
   b. Count the syllables in the word hotdog
   c. **Count the sounds in the word cake**
   d. I’m not sure

6. An example of explicit phonemic awareness instruction is:
   a. teaching letter-sound correspondences
   b. **choosing the words in a set of four words that has the “odd” sound**
   c. reading words in the same word family, e.g. at, sat, mat, cat
   d. I’m not sure

7. Which activity explicitly links spelling with phonemic awareness?
   a. Make as many words as you can using only the letters p, a, s, l
   b. Say a word, then name the letters out loud; write the word
   c. **Say a word, then tap out the sounds in the word; write the letters for these sounds**
   d. I’m not sure

8. Which task requires more refined phonemic awareness?
   a. **What is the first sound in sled?**
   b. What is the first sound in shed?
   c. The tasks are the same.
   d. I’m not sure
9. Phonemic awareness instruction:
   a. is only meant for students at-risk for reading failure
   b. potentially benefits most children in kindergarten and 1st grade
   c. is not appropriate for older students (7+ years old) who have reading problems
   d. I’m not sure

10. Can the words shoe, do, flew, and you be used to illustrate oral rhyming?
   a. yes
   b. no
   c. only you, do, and shoe, but not flew
   d. I’m not sure

11. An example of matching words with the same final sound is:
   a. please-buzz
   b. house-hose
   c. of-off
   d. I’m not sure

12. An example of grouping words with a common vowel sound is:
   a. kin, fist, kind
   b. paid, said, maid
   c. son, blood, touch
   d. I’m not sure
13. You are helping students break a word into its separate sounds. How many sounds are in the word *grape*?

   a. three
   b. four
   c. five
   d. I’m not sure

14. Which list shows a systematic sequence in counting sounds in words, from easy to complex?

   a. *ape, lake, break*
   b. *hop, shop, shops*
   c. *toe, blow, float*
   d. I’m not sure
Table 1

Demographic Characteristics

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<td>M Ed</td>
<td>2.57</td>
<td>1.72</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>HS Diploma</td>
<td>4.94</td>
<td>2.74</td>
<td>0</td>
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<td>AA</td>
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<td>1.91</td>
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<td>BS</td>
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<td>11</td>
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<tr>
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<td>M Ed</td>
<td>6.43</td>
<td>2.51</td>
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<td>PA Training</td>
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<td>No</td>
<td>1.69</td>
<td>1.13</td>
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<td>SD</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>---------</td>
<td>----------------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
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<tr>
<td>Skill</td>
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<td>2.21</td>
<td>1.37</td>
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<tr>
<td>Total</td>
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<td>4.29</td>
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<tr>
<td>Total</td>
<td>Yes</td>
<td>6.07</td>
<td>2.63</td>
<td>2</td>
<td>11</td>
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Table 3

Tests of Between Group Effects for Knowledge Correct for Head Start and Community-based Preschool Teachers

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>15.522</td>
<td>4</td>
<td>3.881</td>
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<td>.393</td>
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<tr>
<td>Within Groups</td>
<td>219.587</td>
<td>59</td>
<td>3.722</td>
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<td>Total</td>
<td>235.109</td>
<td>63</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* p < .05.
Table 4

Tests of Between Group Effects for Skill Correct for Head Start and Community-based Preschool Teachers

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<thead>
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<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>8.343</td>
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<td>Within Groups</td>
<td>92.267</td>
<td>59</td>
<td>1.564</td>
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<td></td>
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<tr>
<td>Total</td>
<td>100.609</td>
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<td></td>
</tr>
</tbody>
</table>

Note. p < .05.
Table 5

Tests of Between Group Effects for Education and Knowledge of Head Start and Community-based Preschool Teachers

<table>
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<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>50.687</td>
<td>4</td>
<td>12.672</td>
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<td>.006</td>
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<td>184.422</td>
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<td>3.126</td>
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<td></td>
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*Note. p < .05.*
<table>
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<tr>
<th>Dependent Variable:</th>
<th>Knowledge Correct</th>
<th>95% Confidence Interval</th>
<th>Mean Difference (I-J)</th>
<th>Std Error</th>
<th>Sig Bound</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educatio I</td>
<td>Education J</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HS</td>
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<td>.593</td>
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<tr>
<td>AA</td>
<td>HS</td>
<td>-.963</td>
<td>.593</td>
<td>.489</td>
<td>-.263</td>
<td>.71</td>
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</tr>
<tr>
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<td>.003</td>
<td>-4.53</td>
<td>-.67</td>
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<td></td>
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<tr>
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<td></td>
<td></td>
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<td>BS</td>
<td>HS</td>
<td>1.638</td>
<td>.713</td>
<td>.160</td>
<td>-.37</td>
<td>3.64</td>
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<tr>
<td>Diploma AA</td>
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<td>.871</td>
<td>.869</td>
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<td></td>
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</tr>
<tr>
<td>Education I</td>
<td>Education J</td>
<td>Mean Difference (I-J)</td>
<td>Std Error</td>
<td>Sig</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td></td>
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<td>-------------</td>
<td>-----------------------</td>
<td>-----------</td>
<td>------</td>
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</tr>
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<td>.801</td>
<td>.858</td>
<td>-1.46</td>
<td>3.05</td>
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</tr>
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<td>.776</td>
<td>.172</td>
<td>-.43</td>
<td>3.94</td>
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<td>BS</td>
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<td>.871</td>
<td>.869</td>
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<td>1.61</td>
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<td>BA</td>
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<td>.855</td>
<td>.990</td>
<td>-2.00</td>
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</tr>
</tbody>
</table>

* The mean difference is significant at the 0.05 level.
Table 7

Tests of Between Group Effects for Education and Skill of Head Start and Community-based Preschool Teachers

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
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<td>4</td>
<td>3.666</td>
<td>2.516</td>
<td>.051</td>
</tr>
<tr>
<td>Within Groups</td>
<td>85.946</td>
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<td>1.457</td>
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</tr>
<tr>
<td>Total</td>
<td>100.609</td>
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<td></td>
<td></td>
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</tbody>
</table>

*Note.* p < .05.
Table 8

*T-Test Group Statistic*

<table>
<thead>
<tr>
<th>Placement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Correct (DV)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community-Based</td>
<td>32</td>
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<td>1.890</td>
<td>.334</td>
</tr>
<tr>
<td>Head Start</td>
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<td>3.25</td>
<td>2.000</td>
<td>.354</td>
</tr>
<tr>
<td>Skill Correct (DV)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community-Base</td>
<td>32</td>
<td>2.09</td>
<td>1.279</td>
<td>.226</td>
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<tr>
<td>Head Start</td>
<td>32</td>
<td>1.75</td>
<td>1.244</td>
<td>.220</td>
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</tbody>
</table>
Table 9

*Independent t-Test Comparing Different Early Childhood Education Placements*

<table>
<thead>
<tr>
<th>Variable</th>
<th>t</th>
<th>df</th>
<th>Sig (2-tailed)</th>
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<td>.749</td>
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<tr>
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<td>62</td>
<td>.280</td>
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</table>
Table 10

Analysis of Responses to Survey Questions by Setting

<table>
<thead>
<tr>
<th>Survey of Teacher PhAKS Questions</th>
<th>Community-based Correct %</th>
<th>Head Start Correct %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Questions: Correct Responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. A phoneme is:</td>
<td>43.75</td>
<td>56.25</td>
</tr>
<tr>
<td>2. Phonemic awareness is:</td>
<td>28.12</td>
<td>40.62</td>
</tr>
<tr>
<td>3. Effective phonemic awareness instruction teaches children to:</td>
<td>53.33</td>
<td>40.62</td>
</tr>
<tr>
<td>4. The students’ first lessons in phonemic awareness involve:</td>
<td>25.00</td>
<td>15.63</td>
</tr>
<tr>
<td>5. A student has broad phonological awareness and now needs explicit instruction. What type of activity focuses on phonemics awareness skills?</td>
<td>37.50</td>
<td>18.75</td>
</tr>
</tbody>
</table>

Count the sounds in the word cake
6. An example of explicit phonemic awareness instruction is: choosing the word in a set of four words that has the “odd” sound

7. Which activity explicitly links spelling with phonemic awareness? Say a word, then tap out the sounds in the word; write the letters for these sounds

8. Which task requires more refined phonemic awareness? What is the first sound in sled?

9. Phonemic awareness instruction: potentially benefits most children in kindergarten and 1st grade

Skill Questions

10. Can the words shoe, do, flew, and you be used to illustrate oral rhyming? Yes

11. An example of matching words with the same final sound is: please-buzz

12. An example of matching words with the same final sound is: son, blood, touch
13. You are helping students break a word into its separate sounds. How many sounds are in the word *grape*?

*Four*

14. Which list shows a systematic sequence in counting sounds in words from easy to complex?

*ape, lake, break*
APPENDIX C
INFORMED CONSENTS AND ASSENTS
TITLE OF STUDY: Preschool Teacher Knowledge and Skills: Phonics and Phonemic Awareness

INVESTIGATOR(S): Dr. Joseph Morgan, Ph.D., Dr. Catherine Lyons, Ph.D., and Cecilia Billow, M. Ed.

For questions or concerns about the study, you may contact Dr. Joseph Morgan at 702-895-3329. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study
You are invited to participate in a research study. The purpose of this study is to determine the knowledge that Early Childhood Education (ECE) and Early Childhood Special Education (ECSE) teachers have about teaching phonemic awareness and phonics skills to four-year-olds in preschool settings.

Participants
You are being asked to participate in this study because you are a licensed preschool teacher in Clark County, Nevada.

Procedures
If you volunteer to participate in this study, you will be asked to do the following: Fill out a paper survey or complete an online survey. Participants must complete all questions of the survey.

Benefits of Participation
There will be no direct benefits to you as a participant in this study. However, we hope to learn whether additional training of preschool teachers is required in their preservice education in order to assist them in preparing four-year-old children to enter kindergarten ready to learn literacy skills.

Risks of Participation
There are risks involved in all research studies. This study includes only minimal risks: You may become uncomfortable in answering knowledge-based questions.

Cost/Compensation
There will be no financial cost to you to participate in this study. The study will take approximately 20 minutes your time. You will not be compensated for your time.
Confidentiality
All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for 5 years after completion of the study. After the storage time the information gathered will be destroyed.

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:
I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

__________________________________________________________________________  ______________________________________________________________________
Signature of Participant                                                    Date

__________________________________________________________________________
Participant Name (Please Print)
UNLV Social/Behavioral IRB - Exempt Review Exempt Notice

DATE:

TO: FROM:

PROTOCOL TITLE:

ACTION: EXEMPT DATE: REVIEW CATEGORY:

June 8, 2016

Joseph Morgan, PhD Office of Research Integrity - Human Subjects

[913222-1] Preschool Teacher Knowledge and Skills: Phonemic Awareness and Instruction

DETERMINATION OF EXEMPT STATUS June 8, 2016 Exemption category # 2

Thank you for your submission of New Project materials for this protocol. This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt.

We will retain a copy of this correspondence with our records.

PLEASE NOTE:

Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI - HS and/or the IRB which shall include using the most recently submitted Informed Consent/Assent Forms (Information Sheet) and recruitment materials. The official versions of these forms are indicated by footer which contains the date exempted.

Any changes to the application may cause this protocol to require a different level of IRB review. Should any changes need to be made, please submit a Modification Form. When the above-referenced protocol has been completed, please submit a Continuing Review/Progress Completion report to notify ORI - HS of its closure.
If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects 4505 Maryland Parkway. Box 451047. Las Vegas, Nevada 89154-1047 (702) 895-2794. FAX: (702) 895-0805. IRB@unlv.edu
Message from Dax Miller:

Re: [913222-2] Preschool Teacher Knowledge and Skills: Phonemic Awareness and Instruction

Please login to IRBNet to review this project.

Dr. Morgan,

Thank you for your message regarding the referenced project. The information has been reviewed and no further information is needed. You may continue with the research with the changes listed in this request. For future changes to this protocol, please send a quick project mail to our office. We will review these changes for a change in review type. If the research remains exempt, we will reply to your IRBNet message letting you know no further information is needed.

Please let me know if you have any questions.

Regards,
Dax Miller
APPENDIX E

ACELERO FACILITY LETTER
Office of Research Integrity – Human Subjects

University of Nevada, Las Vegas

4505 Maryland Parkway Box 451047
Las Vegas, NV 89154-1047

Subject: Letter Authorization to Conduct Research at Acelero Learning Head Start – Clark County.

Dear Office of Research Integrity – Human Subjects:

This letter will serve as authorization for the University of Nevada, Las Vegas (UNLV) researcher/research team, Dr. Catherine Lyons, Dr. Joseph Morgan, and Cecilia Billow, to conduct the research project entitled Preschool Teacher Knowledge and Skills: Phonemic Awareness and Instruction at Acelero Learning Head Start – Clark County (the “Facility”).

The Facility acknowledges that it has reviewed the protocol presented by the researcher, as well as the associated risks to the Facility. The Facility accepts the protocol and the associated risks to the Facility, and authorizes the research project to proceed. The research project may be implemented at the Facility upon approval from the UNLV Institutional Review Board.

If we have any concerns or require additional information, we will contact the researcher and/or the UNLV Office of Research Integrity – Human Subjects.

Sincerely,

[Signature]

Facility’s Authorized Signatory

Date
APPENDIX F
NEVADA DEPARTMENT OF EDUCATION OFFICE OF
EARLY LEARNING AND DEVELOPMENT
FACILITY LETTER
July 26, 2016

Office of Research Integrity – Human Subjects
University of Nevada, Las Vegas
4505 Maryland Parkway Box 451047
Las Vegas, NV 89154-1047

Subject: Letter Authorization to Conduct Research at Nevada Department of Education Office of Early Learning and Development

Dear Office of Research Integrity – Human Subjects:

This letter will serve as authorization for the University of Nevada, Las Vegas (UNLV) researcher/research team, Dr. Joseph Morgan and Cecilia Billow, to conduct the research project entitled Preschool Teacher Knowledge and Skills: Phonemic Awareness and Instruction at the Nevada Department of Education Office of Early Learning and Development.

The NDE-Office of Early Learning and Development acknowledges that it has reviewed the protocol presented by the researcher, as well as the associated risks to NDE-Office of Early Learning and Development. The NDE-Office of Early Learning and Development accepts the protocol and the associated risks to NDE-Office of Early Learning and Development, and authorizes the research project to proceed. The research project may be implemented at NDE-Office of Early Learning and Development upon approval from the UNLV Institutional Review Board.

If we have any concerns or require additional information, we will contact the researcher and/or the UNLV Office of Research Integrity – Human Subjects.

Sincerely,

[Signature]
Patl Ozy
Director, Office of Early Learning and Development
Nevada Department of Education

July 26, 2016
APPENDIX G

PROGRAM

PRESENTATION POWER POINT
Preschool teacher knowledge and skills: Phonemic awareness and instruction

Cecilia Billow, M. Ed.

The development of Early Childhood Education literacy curricula is a primary focus of the new education law.

Every Student Succeeds Act (ESSA, 2015)

Significance

- The current national education agenda includes a strong focus upon children entering kindergarten ready to learn (US Department of Education, 2015).
- The more skills gained in preschool, the greater the chance every child has of mastering the critical skill of reading (Johnston & Watson, 2009).

Significance

- Research overwhelming supports the critical importance of phonological skills as the foundation for future reading success (Hulme et al., 2002).
- The code-related skills of phonemic awareness (PA), phonics (early decoding skills), and alphabetic knowledge (AK), must be the focus of preschool literacy education (Lonigan, Schatschneider, & Westberg, 2008).
The purpose of the current study is to quantify the knowledge and skills that early childhood education (ECE) and early childhood special education (ECSE) teachers have as they provide quality Phonemic Awareness instruction to students in preschool classrooms.

**CURRENT STUDY**

**RESEARCH QUESTIONS**

1. What level of knowledge and skills about Phonemic Awareness do preschool teachers possess?
2. Do preschool teachers' experience and education prepare them to distinguish between phonemic awareness and phonics instruction?
3. Is there a difference in knowledge, skills, and ability to distinguish between phonemic awareness and phonics based upon teacher's certification between Head Start and Community-based preschool programs?

**Procedures**

- The documents you receive will include:
  - UNLV Informed Consent
  - Survey of Teacher PhAKS
  - (Phonemic Awareness, Knowledge, and Skills)
There will be no financial cost to you to participate in this study.

Approximately 30 minutes of your time will be required to complete the survey.

You will not be compensated for your time.

COST/COMPENSATION

Confidentiality

- No identifiable information will be kept with the survey.
- The signed consent form will be stored in a sealed box separate from the completed survey.
- All information gathered in this study will be kept confidential.

Voluntary Participation

- Your participation in this study is voluntary.
- You may choose to not complete the UNLV Informed Consent document, which will end your participation in the study.
- You are encouraged to ask questions about this study prior to the beginning of the survey process.

Participation Consent

- I have read the above information and agree to participate in this study.
- I have been able to ask questions about this study.
- I am at least 18 years of age.
- A copy of this form has been given to me.
Volunteering to Participate?

1. Please sign the UNLV Informed Consent on page two of the handout.
2. Complete the Survey of Teacher PMAKS
3. Raise your hand when you finish and the packet will be collected.

Thank you for your contribution to early childhood literacy research

Cecilia Billow
Dr. Catherine Lyons
APPENDIX H

PERMISSION TO USE

SURVEY OF TEACHER PhAKS
On Dec 5, 2015, at 7:05 PM, Elaine Cheesman <echeesma@uccs.edu> wrote:

Hello Cecilia,

Thank you for asking teacher knowledge survey. I would be honored to have it be part of your dissertation about teacher knowledge, and so give my permission enthusiastically.

Best regards,

Elaine Cheesman

On Dec 6, 2015, at 2:50 AM, Cecilia Billow <billowc@unlv.nevada.edu<mailto:billowc@unlv.nevada.edu>> wrote:

Dear Dr. Cheesman,

I am a doctoral student at the University of Nevada, Las Vegas. My areas of study are learning disabilities and early childhood special education. My research interests are in the area of early literacy intervention and instruction in phonological processing and phonics. For my dissertation I intend to assess the knowledge and ability of preschool teachers to teach foundation literacy skills to four-year-old children with or at risk for disabilities in order to better prepare them to meet the rigor of common core kindergarten academic standards.

I am writing to ask if it would be possible to use the Survey of Teacher PhAKS (Phonemic Awareness, Knowledge, and Skills), which you developed (Cheesman, McGuire, Shankweiler, & Coyne, 2009). My committee would like me to use a validated measure, and the areas your survey assessed coincide perfectly with my interests. I intend to survey preschool teachers in Head Start programs, community-based preschools, and Title 1 schools and early childhood special education programs in the local school district.

I thank you in advance for your consideration in this matter.

Cecilia Billow, M. Ed.
billowc@unlv.nevada.edu<mailto:billowc@unlv.nevada.edu>
REFERENCES


https://www.ed.gov/essa?src=rn


University of Oregon Center on Teaching and Learning (2009). *Big ideas in beginning reading.* Retrieved from http://reading.uoregon.edu


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EDUCATION

University of Nevada Las Vegas, Las Vegas, Nevada
Doctor of Philosophy, Special Education May 2017
University of Nevada Las Vegas, Las Vegas, Nevada
M. Ed. (2010) Specialization: Special Education
University of Nevada Reno, Reno, Nevada
Lewis Clark State College, Lewiston, Idaho
Kansas State University, Manhattan, Kansas

PROFESSIONAL EXPERIENCE

Clark County School District

PRESERVICE/IN-SERVICE TRAINING AND CONSULTATION

Reading Textbook Selection Task Force (2015, November. Clark County School District
Response to Intervention, (2010, October). Presented on Staff Development Day at J. Marlan
Walker International Elementary School, Henderson, NV.

FUNDED GRANTS

7/90 – 7/92 Project Coordinator, Healthy Kids Healthy California Grant, Owens and Associates,
Administrator ($25,000)

PROFESSIONAL ORGANIZATIONS

Council for Learning Disabilities
International Reading Association
CEC – Division of Developmental Disabilities
CEC – Division for Learning Disabilities
Advisory Board, Team 3 Family Center, Nevada County School District, Nevada City, CA
Facilitator, Active Parenting of Teens, Nevada County School District, Nevada City, CA
Facilitator, DECIDE Drug Awareness and Prevention Program, Nevada County School District, Nevada City, CA

CONFERENCE PRESENTATIONS


TEACHING

Courses Taught at UNLV Graduate

- ESP 708 Advanced Strategies for Students with Disabilities (Fall, 2015)
- ESP 708 Advanced Strategies for Students with Disabilities (Summer, 2014)
- ESP 708 Advanced Strategies for Students with Disabilities (Spring, 2014)