EXPLORING THE IMPACT OF AMERICAN SIGN LANGUAGE ON PRESCHOOL CHILDREN’S LETTER NAME AND SOUND LEARNING

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Abstract

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Letter name and letter sound knowledge are two foundational skills essential to learning to read. Yet, research has shown variation in the development of these skills based on socioeconomic status. Additionally, research has suggested educational benefits resulting from the use of gesture with early language development and with classroom instruction. The purpose of the current study was to investigate whether systematic incorporation of gestures in a literacy intervention increases preschoolers’ knowledge of letter names and sounds. In this study, the letter name and letter sound learning of 41 low-income preschool children was evaluated using a pretest, implementation, and posttest procedure. The participant pool included a multilingual and culturally diverse sample located at two preschools in Northern California that serve low-income families. The implementation was an 8-week Alphabet Circle Time Program that varied for two groups of children: Instruction Group and Instruction + ASL group. For the Instruction
Group, the circle time program consisted of sixteen 15-minute circle time sessions where the participants sang the alphabet, looked at large cardboard letters with pictures on them, and practiced saying the letter’s names and sounds. For the Instruction + ASL Group, the circle time program was identical but also included the use of American Sign Language Alphabet gestures.

Contrary to prediction, no significant differences in letter name and letter sound learning were found between the Instruction Group and the Instruction + ASL Group. However, both groups showed significant increases in their letter name and letter sound learning from the pretest to the posttest. Furthermore, children who attended more circle time sessions across the eight weeks showed higher increases in letter sound knowledge than did children who attended fewer times. Thus, the current data suggest the importance of early structured programs in increasing letter knowledge. However, the study does not provide evidence for the beneficial role of gestures in early literacy instruction; because of several methodological limitations on the study, further research on gesture use in early literacy instruction is warranted.

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Chapter 1
INTRODUCTION

Statement of Problem

Reading competency is an important and highly valued skill in the American society. This skill determines a student’s competency in many areas such as math, language skills, science, and social skills. More importantly, it is rare for a student to succeed academically if he is unable to read. Therefore, teachers and parents alike work hard to facilitate the reading abilities of children. Although reading is crucial in academic development, many children lack the skills necessary to become proficient readers; this is especially the case for low-income students. To become competent readers, several foundational skills must be mastered such as letter name knowledge, phonological awareness, phonics, and the alphabetic principle. In particular, Treiman (2000) notes that alphabetic letter knowledge sets the foundation for other pre-reading skills. This foundational skill includes knowing about letter names and sounds, as well as the skill of being able to retrieve this knowledge in a fast manner. Additionally, Armbruster, Lehr, and Osborn (2003, 2006) propose that phonemic awareness and phonics are integral to establishing early reading skills. Phonemic awareness is the ability to isolate and manipulate individual sounds in words, whereas phonics involves the ability to understand letters and the sounds they make (Armbruster et al., 2003, 2006).
This study sought to test a Circle Time Alphabet Program for preschoolers that incorporated letter name and letter sound learning, two important early literacy skills that go hand in hand with phonological awareness, letter-name knowledge, and phonics. Since research has established the importance of teaching these foundational skills for reading, the aim of this study was to explore the effectiveness of using gestures in this instruction.

**Early Literacy Skills**

As stated above, the ability to read, write, and spell are skills that are established only after mastery of other foundational skills such as phonemic awareness, phonics, and letter name knowledge. Letter name knowledge is the ability to recognize and produce the names of each letter in the alphabet in a quick manner. When students know the names of letters, they begin to use this knowledge to find out about other words that they are learning to read (Treiman & Rodriguez, 1999; Roberts, 2003; Foulin, 2005).

Knowing what each English Alphabet letter is a preliminary step to begin reading words composed of several letters, and it works in tandem with other skills such as phonological awareness and phonics.

Phillips, Clancy-Menachetti, and Lonigan (2008) state that one of the major underlying factors responsible for reading deficiencies is the underdevelopment of phonological awareness. Phonological awareness is the ability to hear sound units that occur in language, and to pull meaningful metalinguistic information from the sound units even if an actual meaning is not tied to the sound. For example, a reader knows that
the letter C says “cuh”, even though “cuh” does not actually mean anything.

Phonological awareness ranges from understanding larger sound units of whole words to smaller units such as syllables and phonemes, and it entails knowledge of rhyming, intonation, and alliteration (Armbruster et al., 2003). Moreover, phonemic awareness, a subset of phonological awareness, which entails the understanding that spoken words are composed of individual phonemes (Armbruster et al., 2003), also serves an important role in the establishment of pre-literacy skills. Without phonemic awareness, phonics and the alphabetic principle would be difficult skills to master.

Furthermore, research suggests that if children master these skills, they develop a better grasp of the alphabetic principle, which is an understanding that sounds of printed letters represent spoken words (Treiman, 2000; Bryne & Fielding-Barnsley, 1990). Thus, both alphabetic knowledge and phonemic awareness have an equally necessary role in the acquisition of reading; children need to know the names of letters and understand the sounds they make, and without these skills, students are likely to struggle with reading.

**Intervention with At-Risk Groups**

Studies looking at socioeconomic status have long shown a difference between the achievement of low-income, middle income, and high income groups in several academic areas, including language skills and reading development (Hart & Risley, 1992, 1995, 2003; Lonigan, Burgess, Anthony, & Barker, 1998). For example, Hart and Risley (2003) found that children in higher SES families have much larger vocabularies than children in lower SES families within the first three years, which leads to a massive gap
between the numbers of words known by children of higher SES in relation to the other children (Hart & Risley, 2003). As low income students progress through schooling, it is often noted that the achievement gap continues to widen (Dodd & Carr, 2003). Thus, early language and literacy interventions are needed, particularly for low-income children. Furthermore, studies evaluating early literacy interventions show that these interventions can have a positive effect on learning in areas such as phonological awareness (McIntosh, Crosbie, Holm, Dodd, & Thomas, 2007).

Although the lack of important reading skills can be a detriment for any budding reader, studies reveal students within lower socioeconomic levels tend to struggle even more so with skills linked to reading (Hart & Risley, 1992, 1995; Lonigan et al., 1998; Nicholson, 1997; Dodd & Carr). For example, Lonigan et al. (1998) concluded that students within low SES groups had less phonemic awareness than their higher SES counterparts, as well as less developed skills in other early literacy skills such as alliteration, blending, and rhyme. Additionally, the research of Dodd and Carr (2001) supported this finding, and they proposed that these students were more likely to need more assistance in learning early literacy skills.

McIntosh et al. (2007) evaluated phonological awareness in a group of low SES Australian children, and found that these children did not do as well as their middle-income peers. However, when an intervention was implemented for those struggling students, their performances improved greatly resulting in the low SES groups performing on the same level as the children from the average SES groups. Their use of a language and phonological awareness program over a ten week period revealed that
significant improvements can occur when comparing the intervention group to the control group. Thus, there is a need for early literacy skills interventions for children from low SES backgrounds, despite the dearth of research within this area. Furthermore, there is a strong possibility that the use of gestures in such interventions could be effective for young children’s learning of these early literacy skills.

**Using Gesture with Learners**

Research suggests that the systematic use of gestures is beneficial to language development, and it is possible it could also be beneficial to early literacy development. For example, Acredolo and Goodwyn (2002) conducted several studies investigating the use of sign with preverbal children. Based on their compilation of studies, they concluded that signing with young children has many benefits including the promotion and clarification of early parent-child communication, alleviation of pre-verbal child’s frustration, advancement of speech once verbal language develops, promotion of strong bonds between parent and child, and even increases IQ of the child (Acredolo & Goodwyn, 2005; Johnston, Durieux-Smith, & Bloom, 2005).

Studies evaluating the use of gesture within the classroom show promise in regards to student learning (Daniels, 1994; Goldin-Meadow, Kim, & Singer, 1999; Valenzeno, Alibali, & Klatsky, 2003; McNeil, Alibali, & Evans, 2000). For example, Daniels (1994) found that using American Sign Language boosted the vocabulary development of pre-Kindergarten students, while Goldin-Meadow, Kim, and Singer (1999) found that gesture helped teachers convey mathematical information to students,
even in topics such as math. These studies support the use of gesture in the classroom, suggesting that it supplements student learning in a positive way.

Additionally, studies investigating the use of gesture in reading curriculum geared at helping Deaf and hard-of-hearing students have shown promise in coupling these two components into helping children strengthen reading skills (Trezek & Wang, 2006; Trezek, Wang, Woods, Gampp, and Paul, 2007). For example, Trezek and Wang (2006) found that kindergarten students with hearing loss showed significant improvements in their reading skills when a reading mastery program that incorporated Visual Phonics was implemented in their classrooms. Visual phonics uses hand signs that represent the articulation of phonemes make within the mouth. The aforementioned studies all provide support for using gesture with both developing and struggling readers, and with children who have or do not have auditory disabilities. Thus, the current study explores the use of gesture when teaching pre-literacy skills. Specifically, the incorporation of signs from the American Sign Language Alphabet were used to investigate the following research question: Do low-income preschool children who are exposed to the ASL Alphabet during a circle time letter program learn more letter names and sounds than children whose circle time program does not include the ASL Alphabet?
Purpose of Study

Letter name and sound knowledge, as well as phonological skills, are critical factors in facilitating reading competency (Whitehurst & Lonigan, 2000; Woolsey, Satterfield, & Roberson, 2006). However, some researchers argue that preschool curriculum do not spend enough time focusing on these aspects (Phillips et al., 2008). Thus, innovative and meaningful curriculum is necessary as we strive to help preschool children, especially those of lower SES, learn letter names and sounds. The current study addressed alphabetic learning by focusing on letter name and sound knowledge. The purpose of this study is to test whether gesture, specifically the use of American Sign Language alphabet signs, can aid preschool children in better learning letter names and phonemes that accompany those letters.

Method

Participants and Preschools

The participants in this study included 41 low-income three and four year old children enrolled in two full day preschool programs in the Sacramento, California region. These preschools enrolled children within low to low-middle socioeconomic statuses, ranging from 0 to $30,000 gross household income. The children’s mothers filled out a demographic form that asked about basic demographic information such as children’s age, gender, ethnicity, number of siblings, mothers’ education, as well as
language information such as languages spoken at home, how often the participant is read to, whether literacy activities were done at home, and what sort of literacy activities occur.

**Procedures**

Past research has evaluated language development by administering a pre-test, applying an experimental method, conducting a posttest, then subsequently comparing the pre and post test scores (Daniels, 1994; Valenzeno et al., 2003; Trezek & Wang, 2006; Trezek et al., 2007). This study included similar methods, using a pretest of letter name and sound knowledge of the English Alphabet, a Circle Time Alphabet Program, and a posttest. The Circle Time Alphabet Program was implemented within each preschool classroom in 15-minute sessions, two times a week, for eight weeks. One letter was focused on per week. The participants were randomly assigned to two groups: (a) an Instruction + American Sign Language (ASL) Group that was exposed to American Sign Language coupled with letter and phoneme learning, and (b) an Instruction Group that received identical letter name and sound training but without sign language.

**Materials**

This study utilized several materials during the pretest, posttest, and circle time implementation: (a) a laminated poster with uppercase letters for the pretest and posttest, (b) large cardboard letters for circle time instruction, and (c) a Data Collection Sheet used to record the pre and post test information.
Analysis Procedure

Children’s pretest and posttest scores were analyzed using analysis of variance statistics, comparing letter name and letter sound learning before and after the circle time implementation and comparing the Instruction group and Instruction + ASL Group. It was hypothesized that the group receiving sign language in addition to letter name and sound training would learn and retain more letter names and sounds compared to the group that did not receive sign language.

Definition of Terms

Within the field of literacy, several specific terms are used to describe skills and other aspects of learning, as is the case for any specified area of study. In this section, important early literacy terms are defined to clarify their meaning.

*Alphabetic principle* is the understanding that within an alphabetic language, written letters and words are associated with spoken letters and words, and that those elements written down can be and are linked to verbal words and sounds (Bryne & Fielding-Barnsley, 1989, 1990). *American Sign Language* is a gestural language system used as a communicative tool by people in America who are Deaf or hard of hearing. *Gesture* refers to the use of hands, body, or other nonverbal cues to communicate meaning to others (Iverson & Goldin-Meadow, 2005).
Letter Name Knowledge is the understanding that each letter has a specific label or name (Foulin, 2005) and Letter Sound Knowledge is the understanding that each letter makes one or more specific sounds or phonemes. Phonemes are the smallest component of an alphabetic language, specifically, the sound or sounds a letter makes (Armbruster et al., 2003), which eases children into learning the alphabetic principle and Phonemic Awareness refers to the ability to understand and manipulate phonemes in an alphabetic language. It includes the awareness and ability to isolate, identify, categorize, blend, segment, delete, add, or substitute phonemes in spoken words (Armbruster et al., 2003). Phonics Instruction, then, is instruction that teaches children the relationships between written letters and the spoken sounds they make (Armbruster et al., 2003, 2006).

Phonological Awareness refers to the understanding that an alphabetic language is composed of different aspects, ranging from larger components to smaller components. It includes the awareness of syllables, onset-rimes, and phonemes in words. Thus, phonemic awareness is kind of phonological awareness (Armbruster et al., 2003). Visual Phonics is a gestural system which uses approximately 46 gestured hand signs to mimic the sounds that phonemes make within the mouth. This system is used with reading curriculum to help students who are Deaf or hard of hearing improve their reading skills (Trezek et al., 2007; Trezek & Wang, 2006; Waddy-Smith & Wilson, 2003; Woolsey, et al., 2006).
Limitations of the Study

A major limitation of this exploratory study was that it had several time constraints, and thus a shorter period was used. This may have hindered the letter name knowledge and phoneme learning because the experimenter only met with each class twice per week only focusing on eight letters across the eight week period. The Circle Time Alphabet Program of this study would most likely be much more effective if it were carried out over an entire year and focused on one letter per week, over all five school days of the week, giving the researcher and students enough time to thoroughly explore and discuss that letter.

Additionally, another issue is the lack of a completely neutral control group. Although the study included an Instruction group that did not receive ASL gesture use, in addition to the ASL Group, some constraints on data collection and sample size made it improbable to include a third group that would serve as a control. Therefore, interpretation of the effectiveness of the Circle Time Alphabet Program must be made with caution because other factors beyond the curriculum cannot be ruled out. Despite these limitations, this study was a preliminary step to creating a curriculum and subsequent research studies to help children fine-tune their language skills and strengthen their pre-reading abilities.
**Organization of Remainder of the Thesis**

This study is a preliminary step toward further investigation of the use of American Sign Language, or other gestural systems, with letter name and letter sound curriculum. The overall goal is to find enough statistical data to support the use of America Sign Language in tandem with preschool letter learning, ultimately creating a curriculum which helps students better learn these skills. Chapter 2 reviews the literature that informed this study, Chapter 3 explains the methods used to carry out the study, Chapter 4 states the results, and Chapter 5 discusses the implications and indications of the results, as well as conclusions reached.
Chapter 2

REVIEW OF LITERATURE

Reading competency is a highly valued set of skills in American society, and is necessary to be a successful student. For example, research has shown that students who have reading and writing difficulties early on in their academic careers continue to struggle academically, and these academic struggles relate to behavioral and low motivational issues in school (High, LaGasse, Becker, Ahlgren, & Gardener, 2000, cited in Dodd & Carr, 2003). In contrast, students who become competent readers are more likely to feel confident in their academic abilities. However, before reading can be effectively mastered, children must develop important foundational skills such as phonological awareness, letter name learning, and the alphabetic principle. Yet, research also suggests that many children lack these necessary skills when they enter kindergarten (Nicholson, 1997), and many early childhood education teachers still do not provide enough instruction on these skills (Phillips et al., 2008).

Letters and the sounds they make are abstractions that very rarely exist alone in the English language (Phillips et al., 2008; Roberts, 2003). This makes the skills necessary for reading, such as letter name knowledge and letter sound knowledge, relatively complex for young children to learn, especially since the English language is composed mostly of strings of individual speech sounds blended together. It is difficult to pinpoint exactly why reading skills are so hard to master but various reasons have been proposed. First, children who do not get enough exposure early on to foundational skills
may ultimately be hindered in their early reading skills. Second, literacy skills are considered so abstract that it makes the process of learning them hard for young children to grasp without practice. Third, reading is just a process that takes time to master as the brain develops, no matter the learning ability of the child, as McIntosh et al. (2007) suggest. Whether it is these reasons or others, it is well established that an introduction to early literacy skills within the home and preschool settings, as well as ample opportunities to practice these skills, can benefit the pre-reading abilities of young children, especially if those skills are letter name and letter sound knowledge.

This literature review will first discuss important pre-literacy skills that preschool students must learn as they begin their journey from pre-readers to competent readers, including phonological awareness, letter name and sound learning, and the alphabetic principle. Second, it will discuss the language and reading skill difficulties of students from low-income backgrounds, as well as the interventions used to improve their literacy abilities. Finally, it will discuss the literature on early gesture use, including the role of gesture in improving the reading skills of Deaf students (i.e., Visual Phonics) and as a learning tool for students and teachers within the classroom setting. Overall, this literature review will set up the research objective of this study, which is to investigate whether the American Sign Language alphabet can help low-income preschool children better learn letter names and letter sounds, compared to children not exposed to this gestural alphabet.
Early Literacy Skills

Introducing young learners to pre-literacy skills with the English Alphabet is essential to prepare them to begin reading. Children need to master particular early literacy skills in order to master reading. These skills include learning (a) the entire alphabet and letter names from A to Z, (b) the phonemes (or specific sounds) that each letter makes, and (c) print awareness, i.e. the recognition of written letters. Learning about the alphabet lays the foundation as students begin to remember relevant information about each letter, ultimately easing them into learning how to use the letters and manipulate their sounds when reading. Thus, focusing on the letter names and their sounds helps children progress in their early literacy skills, and ultimately they improve their overall ability to read. Furthermore, letter name knowledge, phonological awareness, and the alphabetic principle are specific skills that prepare young children to become strong readers. These skills are described below.

Letter Name Knowledge

Letter name knowledge is the ability to recognize and produce the names of the letters in the alphabet. Treiman (2000), Phillips et al. (2008), and Foulin (2005) suggest that letter name knowledge is an essential skill necessary in learning to read. They state that this knowledge includes knowing about letters as well as being able to retrieve this knowledge quickly. Moreover, understanding the alphabet, the letter names and sounds, as well as the order of letters in the alphabet, is crucial to learning to spell, read, and
write. Mastering these skills helps children to become effective students in later schooling.

Treiman and Rodriguez (1999) found that letter name knowledge aids in the learning of novel words. They investigated three types of made up spellings of words with varying letter sound cues to see whether pre-readers and novice readers could pull information from the cues. Further, they evaluated which way helped preschool children better learn words based on three conditions: (a) if the made up spelling of the word included both letter name and letter sound cues and began with the letter name such as the “bee” sound in beet (BT-beet); (b) if the made up spelling of the word only had letter sound cues and began with the letter sound such as the “buh” sound in bait (BT-bait); and (c) if the made up spelling of the word had neither letter name or sound cues but rather was based solely on the arbitrary but distinctive visual make-up of a word (BT-ham). The final condition, which is based on the unrelated visual composition of the word, would be similar to what is used in whole word learning. Each participant took part in all three conditions over three to four sessions of word learning, word and picture reading, and letter name and sound tasks. Overall, Treiman and Rodriguez (1999) concluded that both pre-readers and novice readers were more likely to learn novel words when the name of the first letter was heard in the spoken word (BT – beet) than when only the first letter’s sound was heard (BT – bait). Thus, the condition that allowed the participants to utilize the letter name cue best helped them to figure out the word, which coincides with the proposal that letter name learning helps students ease into letter sounds learning (Foulin, 2005).
Furthermore, Foulin (2005) states that letter name knowledge has an influential impact on early literacy skills. He theorizes that a pre-reader’s dependence on and knowledge of letter names helps children pull cues from text, especially if the letter is in the initial word position. In other words, if the first letter of a word begins with a letter that says its own name—like the “b” in “beat” or the “i” in “ice”—a child can use the letter name as a clue to what the word is. Lastly, he states that knowledge of letter names eases into the learning of letter sounds (2005). Foulin explains:

“…letter name knowledge boosts the development of major literacy-related skills, notably letter-sound knowledge and phoneme sensitivity skills, which in turn underlie the acquisition of the alphabetic principle and reading and spelling skills” (p. 145).

Thus, when working in tandem with letter sounds, letter name knowledge serves as an important precursor to budding reading skills. Furthermore, having a thorough understanding of the alphabet goes hand in hand with these other skills; and in order for preschool students to learn to read, they must have knowledge about the letters and the sounds they make, which is one focus of this study. Additionally, Roberts (2003) conducted a study examining whether instruction in letter name knowledge helped preschool children recognize words and found that letter name knowledge does help them recognize the phonetic spelling of words.

**Phonological Awareness**

Phonological awareness is an overall understanding that individual sounds exist in words and are utilized in a language (Phillips et al., 2008; Armbruster et al., 2003) and it includes the ability to determine and comprehend relationships between words.
According to Armbruster et al. (2003), phonological awareness is made of several components—phonemic, onset-rime, syllable, and word awareness. This awareness includes being able to manipulate both larger and smaller sound units of spoken language ranging from whole words to syllables and phonemes, and it entails rhyming, intonation, and alliteration (Armbruster et al., 2003). All of these components give information about a word, and having phonological awareness allows a reader to use this information.

The development of phonological awareness is made possible when children begin to grasp the language and its use, and begin to develop the capacity to hear and use sounds apart from the meaning of words (Phillips et al., 2008). Thus, if a child has phonological awareness, he may know that “cat” is made up of three sounds, has one syllable, and rhymes with “bat” and “rat.” Furthermore, this understanding may aid him when he must read words that are unfamiliar to him, but that share commonalities with other words he may already know and understand. In other words, phonological awareness is related to children’s development of metalinguistic awareness.

Phillips et al. (2008) propose that phonological awareness is a continuum integrating phonological development and linguistic complexity (see Appendix A). They suggest that a learner begins with the understanding of easier concepts like word and syllable awareness, and then their learning progresses to more difficult skills such as awareness of onsets and rimes of syllables, rhyming words, and individual phonemes. The authors indicate that awareness of individual phonemes in words tends to be high in linguistic complexity, and occurs later on the continuum of phonological development.
Armbruster et al. (2003) explain that phonemic awareness is the understanding that spoken words are composed of individual phonemes; for example, the word “cat” is composed of the “c” sound, the “a” sound, and the “t” sounds. Moreover, these authors explain that phonemic awareness includes skills that help children learn to isolate, identify, categorize, blend, segment, delete or add, and substitute phonemes. Although phonemic awareness is a component of phonological awareness, it focuses specifically on distinguishing individual sounds in words, as well as blending individual sounds to make words (Armbruster et al., 2003). Furthermore, phonemic awareness is necessary before students will be able to benefit from phonics instruction, which teaches children the relationship between written letters and the sounds that they make. For example, knowing that the letter “B” says “buh” would exhibit the understanding of the sound of that specific phoneme, /b/. Without skills such as phonics knowledge, later phonological skills would be difficult to develop since phonemes and letter sounds are a basic component of reading. If a child does not know the sound a letter makes, they will not be able to decipher a longer, more difficult word when they begin early reading instruction.

Research has also shown that skills such as phonological awareness are tied to later reading abilities as children progress through school (Burgess & Lonigan, 1998), and these skills begin their development in the preschool years (Whitehurst & Lonigan, 2000). Additionally, Armbruster et al. (2006) note that phonemic awareness instruction is most effective for reading development when children are taught to manipulate phonemes by using the letters of the alphabet. Thus, finding ways to incorporate early literacy skills is important for budding readers. Most preschool classes include letters
and letter names in their curriculum; yet, instruction focusing on aspects of phonological awareness may still be lacking, despite the research that indicates the importance of such skill. Phillips et al. (2008) suggest that preschool instruction still does not focus enough attention on all aspects of phonological awareness. A curriculum that finds new ways to highlight various components of phonological awareness while making the learning meaningful for preschool children is certainly in need.

Phillips et al. (2008) also state that deficiencies in phonological awareness skills tend to be the underlying factors in the reading problems that children face; in most cases, children who struggle with reading do so because they are lacking these necessary skills. Other researchers have revealed that preschool and kindergarten pre-reading skills, such as the alphabetic principle, are strongly influenced by these phonological skills (Waddy-Smith & Wilson, 2003; Phillips et al., 2008), in addition to letter names and sounds knowledge (Phillips et al., 2008). Learning the basics of alphabetic knowledge—which includes phonemic awareness or the letter name learning—establishes an early foundation that could ultimately help children become strong readers. Phonemic awareness, i.e. letter sound knowledge, is included in the study as the researcher investigates whether gesture helps with the letter name and letter sound learning.

**Phonics**

As stated by Armbruster et al. (2006), phonics instruction and knowledge are beneficial for young readers. Phonics skills, especially when taught with an explicit instruction type, allow the understanding of the relationship between written and spoken
letters to be established. Armbruster et al. (2006) define systematic phonics instruction as a type of phonics instruction that directly teaches letter-sound relationship in an explicit sequence, including the instruction of vowels. In contrast, nonsystematic phonics programs do not teach the letter-sound relationships of consonants and vowels and often exclude practice with vowel sounds (Ambruster et al., 2006). Further, nonsystematic phonics programs do not allow students to practice sounds, and what the child needs to know is based on the teacher’s perception. Nonsystematic phonics programs may include whole word learning instruction, for instance, as opposed to sounding words out.

De Graaf, Bosman, Hasselman, & Verhoeven, (2009) conducted a study evaluating the use of unsystematic and systematic phonics instruction with 93 Dutch speaking kindergartners. These researchers conducted pre and posttests of their participants on letter-sound knowledge, phonemic awareness, as well as reading and spelling ability. Then, the participants were separated into one of three groups: systematic phonics training (consisting of letter-sound and phonics training), unsystematic phonics training (consisting of an unstructured phonics program), and a control group where no training was offered. They concluded that systematic phonics instruction—which teaches a specified set of letter-sound representations deemed more effective than nonsystematic teachings, especially when phonemic awareness, spelling, and reading are taken into account. Additionally, Ehri, Nunes, and Stahl (2001) found that systematic phonics instruction was beneficial at strengthening early literacy skills as well. Their meta-analysis which focused on how systematic phonics instruction compared to unsystematic or no phonics instruction found that the use of phonics had
several benefits including helping children with decoding, reading words, understanding text, and spelling, and was advantageous for younger and older students, as well as those in low and middle class situations. Thus, as the understanding of letter-sound relationships are taught and internalized by young learners, this leads to the establishment of the alphabetic principle.

The Alphabetic Principle

Another pre-literacy skill that is essential to learning to read is the alphabetic principle, the understanding that written letters and words have spoken counterparts (Bryne & Fielding-Barnsley, 1990; Foulin, 2005; Treiman, 2000). Bryne and Fielding-Barnsley (1989) state that development of the alphabetic principle falls between letter sound knowledge and competent reading abilities. Furthermore, skills such as letter knowledge and phonemic awareness help to pave the way for mastery over alphabetic principle.

Additionally, Bryne and Fielding-Barnsley explain that once the alphabetic principle is established, it allows children to begin to generalize this learning to other letters or word positions that were not initially learned (1990). However, for the alphabetic principle to be established, preschoolers’ letter sound knowledge and phonemic awareness are both necessary (Bryne & Fielding-Barnsley, 1991; Bradley & Bryant, 1983). Furthermore, Treiman supports the importance of alphabetic learning by stating that, within the first few years of school, those students who struggle to
understand the alphabetic principle will continue to fall behind their peers, especially as the amount of individual reading they do increases (Treiman, 2000).

Overall, implementing curriculum that improves a child’s ability to manipulate the sounds that exist in the alphabetic language system can subsequently lead to improvements in their phonological awareness skills, establishing the alphabetic principle, and laying down the foundations necessary to become effective and efficient readers. Thus, creating a program which exposes children to letter name and letter sound learning as they progress seems to be necessary in order to provide children with all the tools imperative to becoming effective readers. Such a program as the one proposed in the current study can give teachers the opportunity to focus on letter name knowledge and aspects of phonemic awareness, which can be considered one of the more difficult pieces of phonological development.

As mentioned above, several skills are needed to fine tune the reading abilities of young learners. However, reading abilities seem to progress from less complex skills such as word awareness, to more difficult skills such as the ability to understand the alphabetic principle. Thus, this study focuses on two skills, letter name knowledge and letter sound knowledge, which are foundational aspects that can provide young learners with the awareness that ultimately helps them become comfortable with more complex literacy skills. Since learning to read is a step-by-step process, the current study’s focus on specific aspects of literacy skills is a preliminary step to evaluate the early literacy skills of preschool children. Furthermore, not only does this study dissect components of
early literacy, but it also couples those components with gesture, a technique with suggested language development benefits that will be discussed in a later section.

Language and Literacy Interventions with At-Risk Groups

Several components set the foundation for strong reading skills: specifically, phonological and phonemic awareness, letter name knowledge, and the alphabetic principle. Although students have the potential to become strong readers, variables can affect whether they will be successful at building the necessary skills. One such variable is socioeconomic status (SES). Nicholson (1997) explained that several aspects can influence a child’s academic performance, especially when these children come from low SES home environments. He goes on to say that parental effort that goes into teaching children to read within the home—including, the use of books, letters, flash cards, workbooks, and trips to the library (Anbar, 1986 as cited in Nicholson, 1997)—can make a major difference. Introducing young learners to a print rich environment is essential to preparing readers, yet, many low SES parents lack these resources. Issues such as lack of funds to buy books, lower education levels, low academic skills themselves, and having to provide for large families (Nicholson, 1997) seems to put the children living within these conditions at a disadvantage early on. Thus, the variation in mastery of skills and developmental assets at home, as well as inadequacies within some low income homes that are imperative to establish a good literacy foundation, confirm the need for interventions that can help children who live within these low income households.
Social Class Variation in Oral Language Skills

Before a young child can begin to grasp literacy concepts, they must develop oral language skills. Much research has shown that socioeconomic differences exist in family language practices and that these factors can impact the overall language development of children (Hart & Risley, 1992, 1995). For example, Hart and Risley (2003) found that American parents who are professional and those with middle to high socioeconomic status (SES) speak the most to their young children compared to all other socioeconomic statuses. Furthermore, the language that they use tends to be more encouraging with fewer prohibitions or discouraging words compared to the working-class and lower SES families (Hart & Risley, 2003). Consequently, children in higher SES families have much larger vocabularies than children in lower SES families within the first three years, resulting in a massive gap between the numbers of words known by children of professionals in relation to the other children (Hart & Risley, 2003). Thus, the low-income children may need early language interventions to catch up with higher-income children.

Wasik (2010) confirms the importance of promoting interventions for preschool children. Specifically, Wasik explained that properly training teachers to implement developmentally appropriate strategies in language areas including interactive book reading, conversation guiding, phonological awareness, alphabetic knowledge, and writing has positive effects on the vocabulary skills of preschool children. Thus, providing young learners with interventions in language can ultimately help establish important pre-literacy skills that put pre-readers on the path to reading competency.
Social Class Variation in Phonological Awareness

Socioeconomic status can also affect phonological awareness development, with lower SES children showing lower phonological awareness than higher SES children (Lonigan et al., 1998). Specifically, Lonigan and colleagues found early social class differences in several pre-literacy domains, including rhyme, alliteration, blending, elision, and sensitivity to skills needed for phonological awareness; these differences in phonological awareness were exhibited in 2 to 6 year olds (Lonigan, et al. 1998). Moreover, the gap between those in differing socioeconomic strata continues to widen as the children progress through school.

Dodd and Carr (2003) tested children ranging in ages four to six years old on three literacy tasks, including letter reproduction, letter-sound recall, and letter-sound recognition. Their results showed that socioeconomic status affected performance in a significant way, with SES accounting for at least 20% of the subject variation in these literacy skills. Dodd and Carr state that “children from low SES backgrounds are statistically more likely to need greater emphasis on the foundation of emerging literacy—including learning letter-sound associations and printing skills” (p. 136) and that “the U.S. Department of Education (2001) indicate that at school entry, children from low-income backgrounds are more likely to have poorer health, to be less socially adept, to have low motivation to learn, and to know few letter names and letter-to-sound associations” (p. 135) compared to those students who are not from low-income backgrounds. Further, low-income children struggled to do more complex language activities such as describing items or using complex language, compared to their higher
income peers (McIntosh et al., 2007). Thus, programs that find ways to engage low SES students in pre-literacy skills such as letter names and sounds could have the potential to yield changes in their skill level.

McIntosh et al. (2007) investigated whether the language skills of low income preschool students can be improved by an intervention. The participants of this study included 97 low income preschoolers from Queensland, Australia ranging from four to five years old. Several of the participant’s language skills were assessed using the Quick Test of Language which is composed of 30 questions that tested the participant’s ability to report and respond to salient and less salient information, discuss items that they saw, as well as predict, reflect about, and synthesize ideas. Additionally, the phonological awareness skills were assessed, specifically, rhyme awareness and phoneme isolation. After assessments were taken, the participants were broken into an intervention and control group. Next, a language program was presented to the teacher by a speech language therapist, and implemented into the preschool classroom by the teacher everyday for ten weeks, and then the participants were assessed again. The language program included language activities such as story retelling, categorization activities, event recalling, direction following, and phonological awareness activities. Although the results did not immediately show differences between the two groups for the language program, they did show significant differences between the control and intervention group during the three month post-intervention assessment. However, for phonological awareness skills, those who received the intervention program showed significantly greater improvements compared to the control group. Thus, research found that when an
intervention is implemented with students from lower SES groups, skills necessary for reading, such as phonological awareness, can be improved (McIntosh et al., 2007). This study shows that intervention and creativity can make a difference for low-income children.

Past research has implemented interventions for letter name knowledge by incorporating components such as visual stimuli like novel words to evaluate the use of letter names (Treiman & Rodríguez, 1999), or by exposing students to letter names in a group setting (Roberts, 2003). Furthermore, phonological awareness interventions utilize strategies such as practicing specific skills such as rhyme, phoneme blending, and phonological awareness practice (McIntosh et al., 2007; Lonigan et al., 1998). The current study, which also targets low-income preschool students, adds in a gesture component, specifically the American Sign Language alphabet, in order to investigate whether it can aid in letter name and sound learning.

Using Gesture with Learners

Studies have shown the benefits of using gesture to boost language development. Gesture includes using hands, the body, and other nonverbal cues to communicate to others. It is a naturally occurring phenomenon that exists in various cultures and languages everywhere, and is even seen in preverbal children (Iverson & Goldin-Meadow, 2005) and the blind (Iverson & Goldin-Meadow, 1998). Furthermore, Capone and McGregor state that “early symbols, manual and spoken, appear to share underlying
cognitive abilities, and so manual symbols can aid the transition to advancing language milestones” (p. 174, 2004).

**Gesture Use with Young Children**

Iverson and Goldin-Meadow (2005) found that gesture develops before verbal language occurs; and once verbal language begins to unfold, pointing and referential gestures can be used with words to help a preverbal child communicate with others. Additionally, Acredolo & Goodwyn (2005) proposed that gesture, specifically Baby Sign, has many benefits for the language skills of young children, including the promotion and clarification of early parent-child communication, alleviation of pre-verbal child’s frustration, advancement of speech once verbal language develops, promotion of strong bonds between parent and child, and even increases in IQ (Acredolo & Goodwyn, 2005; Johnston et al., 2005). Their creation of Baby Signs led to a nation-wide phenomenon in which teachers and parents began to use and teach pre-verbal children signs to better communicate with their infants and toddlers. Although Baby Signs is not a full-fledge language, since it does not include the components of an actual language such as grammar and syntax, it can be used as a tool for helping young children learn their native language.

Research suggests that gesture can be learned by infants as early as six months old and infants can use gesture as an alternative to crying (Thompson, Cotnoir-Bichelman, McKerchar, Tate, & Dancho, 2007). Furthermore, when mothers translated their infant’s gestures into words, infants were more likely to learn the verbal versions of the gestures.
they produced shortly after learning to produce the gesture, compared to the gestures they
did not produce (Goldin-Meadow, Goodrich, Sauer, Iverson, 2007). Moreover, Goldin-
Meadow et al. (2007) concluded that infants’ gestures gave mothers an opportunity to
supplement the gestures with words, ultimately helping to build their infant’s verbal
vocabulary and use of short sentences. Iverson and Goldin-Meadow (2005) also
concluded that not only does gesture come before words, but when those children used a
gesture and a word together, this predicted that two-word combinations would follow.

Overall, these findings continue to support the idea that teaching young children
gesture may help the children’s language development (Goodwyn, Acredolo, & Brown,
2003; Thompson et al., 2007). In the words of Iverson and Goldin-Meadow, “the fact
that gesture allows children to communicate meaning that they may have difficulty
expressing verbally raises the possibility that gesture serves a facilitating function for
language learning” (2005, p. 367). Not only can gestures help the language development
of very young, preverbal infants, research has shown that it can help Deaf and Hard of
Hearing students improve their reading skills with tools such as Visual Phonics. Thus, if
gesture holds so much promise when used with other learners, there is a strong possibility
that gesture may also support letter name and letter sound learning in preschool children.

**Visual Phonics**

Within the Deaf community, American Sign Language is used to communicate
with others. Occasionally, teaching young Deaf or Hard-of-hearing children to read is a
struggle due to their inability to hear the sounds that correspond with the written letters.
Moreover, when further considering the importance of phonology, which has been established as an important component of pre-literacy skills, studies have evaluated techniques used to teach Deaf children how to improve their reading skills. According to Trezek & Wang (2006):

“In the field of Deafness, the role of phonology in the acquisition of reading abilities has been explored, and research evidence suggests that the ability to use phonological information while reading is what distinguishes skilled readers from average and poor readers” (p. 203).

In an attempt to improve reading skills, the field of Deaf education has created a tool called Visual Phonics, a system which utilizes approximately 46 hand signs that show and emphasize letter sounds (Trezek et al., 2007; Trezek & Wang, 2006; Waddy-Smith & Wilson, 2003; Woolsey, et al., 2006). In other words, Visual Phonics uses hand signs to show how a letter’s sound is created in a speaker’s mouth. Once this understanding is established, it is assumed that Deaf children can gain a better understanding of the actual phonemes of the English alphabet, and can begin to use this skill to tie sounds together to read. Further, Waddy-Smith and Wilson (2003) state that Visual Phonics helps “develop and refine phonological and phonemic awareness in students from their earliest years through high school” (p. 16) as well as helps children with varying levels of hearing loss improve their basic reading skills (Trezek et al., 2007; Waddy-Smith & Wilson, 2003). With Visual Phonics, children are exposed to the written aspect of the letter as well as signs that represent the sound that specific letters make.

Although the idea of Visual Phonics seems promising, it is still in its early stages as an educational technique and very few studies have tested its proposed benefits. In one study, Trezek and Wang (2006) studied the effects of a program for a Hard of
Hearing population, which paired an eight month long Reading Mastery curriculum with Visual Phonics. They evaluated the reading abilities of 13 kindergarten and first grade children with severe to profound levels of hearing loss, before and after the implementation of this program. The results found that the children had higher posttest scores compared to their pretest scores in all of the tested areas, and these students performed better than the national population of Deaf and hard of hearing for their grade equivalent. Additionally, upon interviewing the teachers who implemented the programs, the researchers found that teachers believed part of the successful recall of words was due to the kinesthetic actions that accompany Visual Phonics (Trezek & Wang, 2006).

In a similar study, Trezek et al., (2007) evaluated a separate literacy curriculum called LACES used in conjunction with Visual Phonics in twenty kindergarten and first grade children, and found a significant difference between the pretest and posttest scores for reading improvement as well. The studies suggest that coupling a technique with gesture can help children with hearing loss improve their phonological and reading skills (Trezek & Wang, 2006; Trezek et al. 2007). Thus, if focusing on phonemes and phonological awareness even in children who are unable to hear spoken language can help them to read, finding more ways to highlight phonemes within a hearing classroom could potentially advance the alphabetic abilities of hearing preschool children as well.
**Gesture within the Classroom**

Although hearing preschoolers do not use gesture as much for reference as Deaf preschoolers do, they still tend to use gesture with symbolic means; that is, they use their bodies or imaginary gestured objects during play (Boyatzis & Watson, 1993). Boyatzis and Watson (1993) conclude that in preschool, there is a transition from concrete or material symbols to representations that are more abstract, which “supports theoretical and empirical claims that with age, children’s symbolic representations show increased ‘distancing’ between the substitute and referent object” (p. 734). Further, this study also revealed that as children develop, they are better at copying gestures they see (Boyatzis & Watson, 1993). Thus, as preschoolers age, they are able to use more symbolic gestures to refer to objects and they use imitation to understand concepts better. This behavior can be quite beneficial when in a classroom, and when watching teachers use gestures to teach the alphabet and the sounds letters make, since both gesture and letters use symbols to convey an idea.

Other studies indicate that gesture can help teachers explain concepts within the classroom, give visual cues for spoken words, provide information in more than one modality, as well as keep the attention of students (Goldin-Meadow et al., 1999; Valenzeno et al., 2005; Alibali et al. 1997). Gesture may even help build diversity awareness within the classroom as students with auditory disabilities are mainstreamed into classrooms where children and teachers know some sign language, minimizing communication barriers (Brereton, 2008). Daniels (1994) investigated the influence of American Sign Language on pre-Kindergarten vocabulary development. Daniels used
four classrooms (two with sign language and two without) with a total of 60 African American students and found that the classes receiving sign language scored higher on the Peabody Picture Vocabulary test than the classes that did not receive sign, suggesting that gestural signs can benefit children, including children in relatively low-income areas. Daniels proposes that the benefit may be due to the way that the brain’s right hemisphere processes the visuospatial information, and then how the left hemisphere processes the information, resulting in a stronger foundation for learning language (Daniels, 1994). Further, Daniels concludes that a combination of visual, kinesthetic, and oral exposure to language also helps the children with their language skills. Studies, such as this one, show that there may be a benefit to the use of gesture when teaching letter names and sounds within the classroom.

Another example of how gesture helps children learn comes from the Zoo Phonics Program, a curriculum created to help children learn to read, write, and spell. This curriculum utilizes a multi-modal learning system in which several avenues for learning are used, including (a) verbal, as the teacher and children speak about the letters and animals, (b) auditory, as they hear songs, (c) visual, as they look at the letters and the animals tied to it, and (d) movement, as they learn and execute the movements assigned to each letter (Zoo Phonics, 2009). For example, as students learn a specific letter, a movement is tied to the letter as well as a visual representation of the letter in the form of an animal. Additionally, each letter is tied to an animal whose name begins with that letter such as Bubba Bear or Allie Alligator. The creators of this curriculum, Georgene Bradshaw, Charlene Wrighton, and Irene Clark, explain that allowing children to learn
with these different modalities helps them better learn the letters. Lastly, one of the major components of Zoo Phonics is the use of the body. The children learn animal movements that go along with each letter (Zoo Phonics, 2009). Although there are not many studies testing the use of this curriculum, it is widely used to teach toddlers, preschoolers, kindergartners, first graders, children in grade school with reading struggles, and children with special needs. Furthermore, components of the curriculum is research supported such as the benefits of systematic phonics instruction (Ehri et al., 2001; Armbruster et al. 2006, de Graaff, Bosman, Hasselman, & Verhoeven, 2009), however, more studies utilizing the curriculum are necessary to truly support the assumed benefits.

Gesture also benefits teachers. Goldin-Meadow, Kim, and Singer (1999) discussed numerous findings in regards to teachers’ use of gesture when instructing children. Their study used 49 third and fourth grade children to investigate the learning that occurred. They found that teachers can use gesture to reveal mathematical information to third and fourth grade children during a lesson on mathematical equivalence, which helped children gain a better grasp of the material. Further, they found that gesture can supplement what the teacher instructs as well as give more pertinent information, allowing the teacher to provide a teaching environment rich with tools to help the child learn. Lastly, they state that:

“When the two modalities are used to complement one another, a combined speech-gesture communication can be highly effective… Gesture can thus be used to provide a second representation, one that overlaps with but is not identical to the representation conveyed in speech…data suggest that such overlapping and concrete instantiations can have a beneficial effect on child uptake” (Goldin-Meadow, et al., 1999).
The above finding coincides with Vygotsky’s idea that if a child’s language environment is rich in concepts that are varied as well as complex, that children’s thinking will begin to align with this type of language, and they will begin to “think in complex and varied ways” (Thomas, 2005). The signed alphabet may be considered complex and varied since it is different from what the child already knows, but it also gives the child another way to internalize the alphabet. Thus, when gesture is used within a lesson, it gives students something else to use when attempting to advance their thinking, solve problems, and understand the material presented by the teacher. Additionally, as Valenzeno et al. (2003) found, the use of gesture can help to keep the attention of the child as they watch the teacher instruct.

The Current Study: Use of American Sign Language with Letter Names and Sounds

Overall, gesture has been used with individuals who are Deaf or hard of hearing for many years; however, research has found that gestures also work well with hearing individuals without auditory disabilities. As studies have revealed, using gesture can aid learning within the classroom (Goldin-Meadow et al., 1999; Valenzeno et al., 2005; Alibali et al., 1997). Specifically, gestures help teachers to explain concepts within the classroom. Further, gesture can provide more information than just verbal information while giving students a visual cue for spoken words. Additionally, gesture helps show information in more than one modality, as well as keeps the attention of students. These
benefits are seen with varying ages, such as elementary children, and with varying concepts such as math or language.

Although the Visual Phonics technique has been known to help hard of hearing and Deaf children, it focuses on signs for how different phonemes are articulated (Woolsey, et al., 2008; Waddy-Smith & Wilson, 2003; Montgomery, 2008). Thus, these gestures are not actual representations of letters, only representations of the letter sound production for those who cannot hear them. In view of the fact that reading is crucial, and phonemic skill and letter knowledge are important factors helping to facilitate reading competency (Whitehurst & Lonigan, 2000; Woolsey, Satterfield, & Roberson, 2006), educators must strive to find innovative and meaningful ways to help preschool children learn letter sounds and letter name knowledge. Thus, including American Sign Language (ASL) and actual representations of letters in ASL for children who are able to hear sounds may be a productive way to accentuate letter name and letter sound development, especially since ASL has been shown to help with vocabulary development (Daniels, 1994).

Learning letter names and the sounds they make can be considered complex (Phillips et al., 2008) because phonemes do not usually exist separately in the English language apart from “a” and “I” for example. Thus, it is possible that using reinforcing gestures such as the American Sign Language alphabet and the movement that mimics the sound each letter makes such as sliding the ASL “I” across an long invisible plane to indicate the long I sound, or punching the air with the “I” to represent the short “I” sound, these gestures could quite possibly help preschool children internalize the letter
This study utilizes American Sign Language alongside letter name and letter sound learning as a means to help preschool children improve their pre-literacy skills.

Introducing young learners to pre-literacy skills is important to prepare them to become effective readers. Furthermore, letter name and letter sound knowledge seem to be two great starting points for creating a curriculum geared at improving phonological awareness. Additionally, integrating American Sign Language into the learning process can potentially give the children another tool to help them learn letter names and sounds. Thus, the overarching research question to be answered with this study is: Can the use of the American Sign Language Alphabet within a letter name and letter sound learning circle time program help low-income preschool children better learn letter names and letter sounds? I hypothesized that the group receiving sign language in addition to letter name and sound training would learn and retain more letter names and sounds as compared to the group who did not receive sign language. My study differs from previous ones in that I used American Sign Language to fingerspell letters instead of mimicking sounds being made in the mouth, or teaching vocabulary words.
Chapter 3
METHOD

Design and Research Questions

This study examined whether the use of the American Sign Language Alphabet within a letter name and letter sound learning circle time program helps preschool children learn more letter names and letter sounds, compared to a learning circle program that does not include the use of the American Sign Language Alphabet. The participants included a diverse group of low-income preschool children. The participants were split into two groups: Instruction Group who received a letter name and sound circle time, and Instruction + ASL Group who received the same circle time instruction in addition to the ASL alphabet. The students were pretested on letter name and letter sound knowledge and then tested after an 8-week period of circle time instruction. Then, the pretest and posttest scores for letter names and sounds were examined using analysis of variance statistics.

Participants and the Preschools

The participants in this study included 41 three and four year old children ($M = 3.7$ years; 20 boys, 21 girls) enrolled in two preschool programs in the Sacramento, California region. Initially, the sample included 44 participants; however, three
participants did not complete the program and thus were not included in the analyses. Both programs were full day preschools that served low income students. The preschools enrolled children within low to low-middle socioeconomic statuses, ranging from 0 to $30,000 gross household income. The children’s ethnicities included White \(n=2\), Black \(n=11\), Mexican or Hispanic \(n=13\), Asian, including Chinese, Cambodian, or Hmong \(n=8\), and biracial \(n=7\). The languages spoken within the children’s homes included English, Spanish, Chinese, Cantonese, Hmong, Japanese, Toi Shan, and Cambodian. In some homes, a mixture of languages was spoken, including English and Spanish, English and Chinese, and English and American Sign Language. Furthermore, according to demographic survey data, the participants’ number of siblings ranged from no siblings to seven, and mothers’ education ranged from some high school to some college or an Associates or Technical Degree. Specifically, mothers’ education varied from not completing high school \(n=4\), completing high school \(n=22\), attending some college \(n=9\), and receiving a technical degree or an Associate’s degree \(n=6\).

**Procedures**

**Recruitment and Preparation**

The researcher recruited participants through contacts with the preschool directors and teachers at the two preschools. Prior to the study, the researcher spent approximately five days in the classrooms. The first visits helped the researcher acquaint the children to her presence and to hand out consent forms and demographic surveys (see Appendix D).
This allowed the children to feel comfortable working with her within the preschool environment, and also to allow mothers to ask any questions. Before the pretest was administered, mothers signed a consent letter and filled out a demographic survey. Some mothers completed the forms as soon as they received them, and others completed the forms at home and returned them at a later date. The subsequent visits, after the five day acclimation period, were used to run the pretests. During the pretest, each preschool participant whose parent returned a completed consent form was asked if he or she wanted to participate, and their assent was recorded on the data collection sheet (see Appendix E). Next, the letter name and sound knowledge was evaluated with a pretest administered to each participant, who was asked the name of each letter and what sound(s) it made.

After the children were pretested, they were randomly placed into either the Instruction group or the Instruction + American Sign Language (+ASL) Group, determined by randomly picking names out of a bag and assigning them to a group. Thus, both preschools had both an Instruction Group who received the Circle Time Alphabet Program, and an Instruction + ASL Group who received the same Circle Time Alphabet Program but with American Sign Language incorporated into the program. At the conclusion of each circle time, all participants received a sticker, and at the conclusion of the study, a gift certificate to a bookstore was presented as a token of gratitude to each preschool class.
Pretest and Posttest Procedures

The design of this study included a pretest, implementation, and posttest. The pretest and posttest included a letter recognition task and a letter sound task. During the pretest and posttest, each child participated in a quiet place away from the rest of the children. First, the researcher asked if the child wanted to participate in the game. Then, the researcher asked the child his/her age, and explained the rules, informing the participant that the researcher was going to ask the name and sounds of each letter on the poster. Additionally, the researcher told the child that, if he or she did not know the name or sound of the letter, it was okay to say, “I don’t know”. Next, each participant was asked all 26 letters in random order. The random order was determined by the researcher, who had an envelope with 26 small sheets of paper that each had one letter printed on it. During the pretest and posttest, the researcher pulled out a letter in random order from the envelope, looked at the letter, and asked the participant about the letter by pointing to a large poster which had the uppercase letters on it.

Once the researcher pulled out a letter, she pointed out the letter on the poster, which faced the participant, and asked “What is the name of that letter?” or “Do you know the name of that letter?” If the participant answered correctly, the researcher wrote a “Y” next to the letter on the letter name section of the Data Collection Sheet. If the child answered incorrectly or stated that they did not know, the researcher wrote an “N”. In addition, the child was asked the name of the letter first, and then asked what sound the letter made. If the letter was a vowel, the researcher stated that this letter makes two sounds and asked the participant what two sounds that letter made to determine whether
the participant knew the short and long sounds of vowels; the long I vowel sound such as
the sound found in “my” was tested. When the participants answered, the researcher’s
response was similar for both correct and incorrect answers, in that the researcher stated,
“You are good at this game” or “We’re almost done.” The child’s answers were never
corrected since this would be the purpose of the Circle Time Alphabet Program
implemented in the second part of the study. The procedure for the pretest and posttest
was identical for both the Instruction Group and the Instruction + ASL Group. However,
the order in which the letters were presented to the children was always randomized for
each child on both the pre and post tests.

Implementation Procedure

The implementation of the Circle Time Alphabet Program proceeded over
approximately eight weeks. Within each preschool, the participants were divided into
two groups: Instruction Group and Instruction + American Sign Language Group. Each
group participated in the circle time separately from the other group. That is, when the
Instruction Group was inside the classroom participating in the Circle Time Alphabet
Program, the Instruction + ASL Group was playing outside. Then, once the Instruction
Group was finished, those preschoolers went outside while the Instruction + ASL Group
joined the researcher inside to participate for their turn. Sometimes the researcher led the
Instruction Group first in the circle time activities, and then the Instruction + ASL Group,
and vice versa.
During the implementation phase, both preschools were visited twice a week; for each visit the Alphabet Program was presented during a brief circle time session of no more than 15 minutes. The circle time took place within the classrooms, usually the children’s primary classroom, except for one day when a neighboring classroom was used. One letter was focused on per week, totaling eight letters. Due to scheduling conflicts, the implementation spanned eight weeks rather than the originally planned 10 weeks, and thus, only eight letters were focused on; however, 10 letters were reviewed during each circle time. In other words, eight out of the ten letters received the specified instruction, while two out of the ten letters were only briefly reviewed at the end of each session, resulting in a review of all ten letters. The reason for this was that the experimenter began the study with ten, and decided not to change that number due to the fact that all the previous sessions reviewed ten letters.

**Circle Time Alphabet Program**

Every session of the Circle Time Alphabet Program began with the recording of participants’ attendance. Some of the children attended the entire eight weeks (16 sessions), while others were absent and thus received a shorter intervention. The absences ranged from zero to eleven sessions, with an average of 2 days missed. Specifically, 93% of the students attended 10-16 sessions ($M = 14$ sessions), 7% of students attended 5-9 sessions ($M = 6$ sessions), and no students attended less than 5 sessions. Only the three children who moved schools or stopped attending school altogether were dropped from the study.
Next, the children and researcher sang the alphabet so that the children could hear the letters from A to Z, as well as see the American Sign Language (see Appendix B) which was signed by the researcher, as the alphabet was sung for the Instruction + ASL Group. Each day, the children had each component incorporated into their learning of a letter including print, letter names, phonemes, and American Sign Language for the Instruction + ASL Group. Ten letters were picked for implementation, one letter per week because initially the program was going to span across ten weeks, focusing on ten letters total. Week 1 was letter “I”, week 2 “J” and then letters “W”, “L”, “M”, “O”, “U”, “A”, “K”, and “E”, for the subsequent weeks. “K” and “E” were the two letters that were not focused on, but they were reviewed during each circle time session; this did not seem to impact the results. The researcher incorporated five vowels and five randomly picked consonants. Vowels were used allowing the researcher to focus on short and long sounds. However, the order of weekly implementation was random, by pulling letters from an envelope. Both groups and both preschools received the same letter order during their session. Everything within the sessions were the same, the only difference being that fingerspelled letters and the movements associated with them was only used with the Instruction + ASL Group.

After the alphabet was sung, the researcher showed the large cardboard letter of the week (see Appendix C). When the researcher pulled out the letter and showed it to the group, she asked, “What letter is this?” This gave the children a chance to call out the letter. Then, she identified the letter and asked if the children could repeat the letter’s name several times. Next, she asked what sounds that letter made; she then made the
sounds for the children to hear, asking them to repeatedly make the sounds with her. Then, together, the researcher and the children practiced saying the letter name over and over again, and then the letter’s sounds repeatedly. Next, the researcher pointed to the stickers on the letter and asked the children what the item was. After the children guessed it, she said the correct name for the item and emphasized the letter sound at the beginning of the item’s name. For example, if she pointed to the apron, she would emphasize the long A sound each time she said “apron”.

Next, the researcher and the students practiced the letter name and sounds again several times. Then, the researcher took the time to pull out the other nine letters that would be used over the experiment and quickly showed the letter, told them the letter name and the sounds it made, and had the children practice saying these. Thus, during each 15 minute session, each of the ten letters was reviewed. Lastly, the researcher called on each student individually and asked, “What is the name of this letter?” and “What sound or sounds does this letter make?” Once the child answered, he or she was given a sticker and told that he or she could go back outside with the group.

The circle time procedure was the same for both the Instruction and Instruction + ASL Groups, except that the American Sign Language gestures were used with the Instruction + ASL Group. The researcher held up the ASL letters when she sang the alphabet or named the letter, and then moved the gesture depending on the short or long sound. If the letter was a vowel, which has both short and long sounds, the researcher slightly punched her sign forward for short sounds, or slid her sign across an invisible plane for long sounds. For example, for the letter I, she presented her raised pinky finger,
the ASL sign for I, and punched it forward as she made the short sound, or she slid it in front of her as she made the long sound. Thus, each time she said the letter, the gesture was presented; and each time she made the letter sound, the appropriate gesture movement was used. The movements were also used when talking about the pictures on the stickers. When the researcher emphasized the letter, she used the ASL movement that coincided with the letter she was focusing on. For example, if the word was “apron” she slid her ASL “A” along an invisible plane as she said, “Aaaa-pron” repeatedly. Again, each time the researcher said the letter, she and each of the children said and signed the letter, and made the movements for that letter sound. This was applied to every letter the researcher presented, even the reviewed letters. At the end of the eight weeks, a posttest was administered to use as a comparison. The same procedure as used for the pretest was used for the posttest.

**Materials**

This study utilized several materials during the pretest, posttest, and circle time implementation. First, a laminated poster was used for the pretest and posttest. The poster was 24 by 18 inches with a green background and white stickers that each had uppercase letter printed in black. There were four letter stickers across six rows, with a seventh row having just two stickers for the last two letters of the alphabet. The letters were aligned in alphabetical order from A to Z. Second, small 1 inch by 1 inch letter cards were used to determine the randomized letter order. One black, uppercase block
letter was printed on each square, and all 26 squares were mixed up and pulled randomly when asking the children the letter names and letters sounds during the pretest and posttest. Third, large cardboard letters painted green on both sides were used during the circle time. Each large cardboard letter had stickers. The stickers included an uppercase and lowercase version of the large cardboard letter, as well as items that began with that letter. For example, the letter “A” had a sticker of an apron, an alligator, an apple, and an acorn, as well as a lowercase “a” and an uppercase “A” (see Appendix C).

Lastly, a Data Collection Sheet (see Appendix E) was used to record the pre and post test information. The data collection sheet was broken into two sections: Letter Names and Letter Sounds. The Letter Names section listed all 26 letters with three vertical columns, each letter having a line beside it which the researcher wrote either a “Y” if the participant accurately named the letter asked or an “N” if they did not. All of the “Y”s were counted to determine how many letter names each participant correctly named out of 26 letters. The Letter Sound section was identical, except it had two lines for vowels to record the long and short sounds. A separate Data Collection sheet was used for the pretest and posttest.

**Data Analysis Procedure**

**Measures**

Data collection included demographic information as well as pretest and posttest scores. First, basic demographic information was collected by giving the children’s
parents a brief sheet to complete that asked for the following information: child’s name, sex, ethnicity, age, number of siblings, languages spoken within the home, parent’s income range, mother and father’s highest level of education, and in-home literacy practices (See Appendix D). This survey was included with the consent form, which the parents filled out during times when the researcher was in the classrooms. This survey allowed for the researcher to compare SES, age, sex, parent’s education, home language, and in-home practices in attempt to see whether differences within these factors may account for later variability for children in the study.

The children’s knowledge of letter names and sounds was assessed individually. The total number of letter names correctly identified by the child was recorded. Thus, the Letter Names Score was out of 26 letters meaning each letter was worth one point. Additionally, the total number of sounds correctly identified was recorded, making up the Letter Sound Score. The Letter Sound Score was out of 32 which includes basic consonant sounds as well as short and long sounds for vowels and the letter “Y”. Overall, each participant had two Letter Name Scores (pretest and posttest) and two Letter Sound Scores (pretest and posttest).

**Analysis**

To analyze the data, the researcher used several procedures. First, the demographic information was analyzed by comparing the two groups on information gathered from the parent survey such as age, maternal education, household incomes, ethnicities, number of siblings, literacy activities within the home. Second, an Analysis
of Variance was used to compare the two groups on the number of letter names and sounds learned between the pretest and posttest. Third, a correlational analysis was conducted to evaluate whether number of circle time sessions attended had a correlational relationship to children’s letter name and letter sound scores.
Chapter 4
RESULTS

Demographic Information

Descriptive Statistics: Home Literacy Activities

Analysis of demographics focused on 41 three and four year old preschool students ($M = 3.7$ years; 20 boys, 21 girls) and their families. Demographic characteristics of children and their families are described in the Methods chapter. Additionally, when asked about literacy activities in the home, two mothers stated they rarely read to their child, 16 mothers read once or twice a week to their child, 18 mothers read at least once per day, four mothers read more than once per day, and one mother did not indicate her in-home reading habits. Furthermore, 78% of the mothers indicated that they engaged in other kinds of literacy activities with their children such as reciting the alphabet, doing spelling games or exercises, using flashcards, writing and saying words, reading books, pointing at or playing with letters, and even engaging in activities in other languages such as American Sign Language, Spanish, Chinese and French. Another 32% stated that they did not partake in literacy activities at home.

Demographic Comparisons

In order to examine whether the two preschools were similar in demographic characteristics, a series of one-way between subjects ANOVAs were conducted on the
following demographic variables: child’s sex, ethnicity, age, number of siblings, languages spoken within the home, parent’s income range, mother’s highest level of education, and in-home literacy practices. No significant demographic differences were found between the two preschools. The same series of analyses were conducted to examine potential demographic differences between the Instruction Group and the Instruction + ASL Group. The results indicated that the two groups did not significantly differ on any of the demographic variables. Overall, the two preschools and the two instruction groups were demographically similar.

Comparisons of the Instruction and Instruction + ASL Groups

Letter Name Learning

Although the two groups received an identical circle time program that focused on letter names and sounds, the Instruction + ASL Group experienced the added component of American Sign Language letters and movements coupled with the verbal labels of the letter names and sounds. In order to examine whether children in the Instruction + ASL Group learned more letter names after eight weeks, compared to the Instruction Group, a two-way mixed ANOVA was performed on children’s letter name scores, with Group (Instruction, Instruction + ASL) as the between subjects variable and Test (Pretest, Posttest) as the within-subjects variable. The results indicated a significant effect of Test, $F(1,39) = 46.41, p < . Thus, children in both instruction conditions had higher posttest
scores than pretest scores for letter names. No other significant effects or interactions were found. (See Table 1 for means and standard deviations).

**Letter Sounds Learning**

To analyze whether the Instruction + American Sign Language Group learned more letter sounds than the Instruction Group, a two-way mixed ANOVA was performed on children’s letter sound scores, with Group (Instruction, Instruction + ASL) as the between subjects variable and Test (Pretest, Posttest) as the within-subjects variable. The results indicated a significant effect of test, $F(1, 39) = 46.14., p > .001$. Thus, children in both instruction conditions had higher posttest scores than pretest scores for letter sounds. No other significant effects or interactions were found. (See Table 1.)

### Table 1

*Average Group Means for Letter Name and Letter Sound Pretest and Posttest*

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$M (SD)$</td>
<td>$M (SD)$</td>
<td>$n$</td>
</tr>
<tr>
<td>Instruction + ASL Group</td>
<td>23</td>
<td>9.18 (9.59)</td>
<td>13.32 (9.35)</td>
<td>23</td>
</tr>
<tr>
<td>Instruction Group</td>
<td>18</td>
<td>8.32 (7.08)</td>
<td>14.16 (9.25)</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>8.78 (8.43)</td>
<td>13.71** (9.20)</td>
<td>41</td>
</tr>
</tbody>
</table>

*Note.* ** $p < .001$. 
Relation of Attendance to Letter and Sound Learning

Because circle time attendance varied across children, the final set of analyses examined correlations between attendance scores and the learning of letter names and sounds. These analyses were necessary to establish whether participants who received more instruction did or did not have larger gains in posttest scores. Difference scores were calculated prior to doing the correlations (with difference scores = posttest score – pretest score for each measure). The correlational analyses revealed a positive correlation between number of circle time sessions attended and letter sound difference scores, \( r = .38, p < .01 \). However, there were no significant correlations between attendance and letter name difference scores, \( r = .23, p > .05 \).
Chapter 5
DISCUSSION

The current study sought to answer the question: Can the use of the American Sign Language Alphabet within a letter name and letter sound learning circle time program help low-income preschool children better learn letter names and letter sounds? Although analyses found no statistical difference between the Instruction Group and the Instruction + ASL Group, we did find that incorporating an Alphabet Circle Time Program, with or without American Sign Language, resulted in an increase in letter name knowledge from the pretest to the posttest.

Letter Name and Sound Learning

Letter Name Learning

Letter name knowledge and letter sound knowledge were analyzed separately for this study; however, the two skills go together when it comes to early literacy skills. Research has suggested that letter name knowledge is imperative to learning to spell, read, and write (Treiman, 2000; Phillips et al., 2008; Foulin, 2005), and instruction that focuses on this skill can eventually help students begin to recognize words (Roberts, 2003). The results for children’s letter name learning revealed that there were no significant differences between the Instruction and Instruction + ASL Groups. However, there was an effect for testing time, such that preschool students in both the Instruction
Group and the Instruction + ASL Group knew significantly more letter names at the Posttest than the Pretest. Further, the children who attended the most circle time sessions during the 8 week period showed higher letter name gains from the pretest to the posttest. This finding suggests that the posttest gains were related to exposure to the circle time activities rather than to gains that would have naturally occurred over time without an intervention.

Thus, this study suggests that using visual cues such as large letters and stickers as well as repeating and reviewing the letter names, does help preschool children better learn letter names. Furthermore, if students begin to learn letter names better, their pre-reading literacy skills begin to strengthen as they become familiar with aspects of the alphabet (Treiman & Rodriguez, 1999). The current findings are consistent with the research that concluded that, when young readers are introduced to early literacy skills in a systematic way, they are more likely to improve these skills overall (de Graaf, et al., 2009). However, these authors who also used the pre and posttest method found that within the Letter Sound section of their study, both the systematic and unsystematic groups improved more than the control group. Thus, exposing students to instruction is certainly a necessity in regards to literacy instruction.

**Letter Sound Learning**

Research has suggested that letter sound learning and phonemic awareness are foundational skills for reading. For example, these skills are important for learning to establish the Alphabetic Principle, which is a skill that falls between letter sound
knowledge and reading competency (Bryne & Fielding-Barnsley, 1989, 1990). Similar to letter name learning, the results for letter sound learning revealed that there were no significant differences between the Instruction and the Instruction + ASL Groups. Yet, just as with letter name learning, preschool students in both the Instruction Group and the Instruction + ASL Group knew significantly more letter sounds at the posttest than the pretest. However, in contrast to the findings for letter names, children’s attendance at circle time sessions did not significantly correlate with gains in letter sound knowledge. Thus, we cannot be certain that the increase from pretest to posttest was due to exposure to the circle time activities rather than to natural learning that occurs over time regardless of intervention.

Just as past research suggests, letter sound skills seem to be on a continuum and work with each other to strengthen overall pre-literacy skills (See Appendix A; Phillips et al., 2008). Additionally, the current study’s findings coincide with Visual Phonics conclusions (Trezek et al., 2007; Trezek & Wang, 2006). Trezek and colleagues (2007) conducted a pretest and then implemented a reading intervention curriculum which incorporated a Visual Phonics focus, subsequently showing positive gains in reading abilities once the posttest was administered. The reading intervention included LACES, a curriculum which had five components of reading skills including literacy board, reading aloud, vocabulary, reading enrichment, and reteaching curriculum, and the Visual Phonics and LACES intervention over a year period. Furthermore, even though these previous studies included participants with varying levels of hearing loss, improvements in reading abilities were still apparent. Thus, incorporating curriculum that focuses on
specific literacy skills such as letter name and letter sound skills can be beneficial for students with certain disabilities, as well as students from low SES who tend to struggle with language and literacy skills (Hart & Risley, 2003).

Overall, the results suggest that using this type of Alphabet Circle Time Program with preschool students helps them learn aspects of the alphabet. However, consistency of instruction is important to this learning. In particular, this study found a significant correlation between children’s attendance of the Alphabet Circle Time Program and improvements in letter sound knowledge, such that those students who attended the program more often tended to show bigger increases in their letter sound learning. Just as the research shows, an intervention can help students increase early literacy skills (McIntosh, et al., 2007).

**Gesture Use**

The study did not find evidence of the special role of gesture use in learning letter names and sounds. However, research has shown that using gesture has many benefits within the classroom such as keeping the attention of the children, showing information in more than one modality, giving information an environmentally grounded presence, and providing children with more than just verbal or visual information (Goldin-Meadow et al., 1999; Valenzeno et al., 2005; Alibali et al., 1997). In regards to this study, possibly the use of American Sign Language did not yield significant differences across the groups because ASL letters may be considered more difficult for preschool children to work with compared to other gestures such as Baby Sign and Zoo Phonics. Perhaps
ASL letters would be more effective with an older sample of children, or possibly, exposing the children to the gestures over a longer period of time may have shown increases in letter name and sound scores.

**Limitations of the Study**

Although our study suggests that using an Alphabet Circle Time Program improves the letter name and sound learning of preschool children, there were several limitations. One limitation was the exclusion of a control group which could have allowed the researcher to see if children without any intervention also improved their scores over time. In other words, children’s knowledge of letter names and sounds may naturally increase over time from their exposure to the preschool environment or home environment. Thus, if a control group had been utilized and children within that group had not shown a difference between the pretest and the posttest, then the researcher would have had stronger evidence in regards to the usefulness of the Circle Time Alphabet Program. However, there was a significant correlation between circle time attendance and increases in letter sound scores, which may suggest that the circle times were important to learning, since those participants who attended more sessions scored higher on their letter sound learning posttest than those participants who attended fewer sessions. Future researchers who hope to continue the investigation of American Sign Language in the preschool should certainly consider utilizing a group of children that does not receive any program from the researcher.
A second limitation was the length of time dedicated to the Alphabet Circle Time Program. Allotting eight weeks only allowed the researcher to cover eight letters instead of the entire alphabet. This limitation may not have given the students who were learning the American Sign Language enough time to truly use it to their advantage. As Acredolo and Goodwyn (2002) and Thompson et al. (2007) state, learning signs can take time before children may begin actually using them. Thus, a program that incorporates ASL over a year, or at least 26 weeks allowing for all letters to be incorporated, may yield differences between a group who just received the instruction, and a group who received instruction and American Sign Language. Furthermore, a longer span that allows incorporation of the entire alphabet would give the researcher more time to work with preschoolers in regards to what letter names and sounds they can learn. Future research should attempt to use a longer period and incorporate the entire alphabet in order to truly evaluate the effectiveness of a program such as this.

A third limitation that may have affected the results regards the literacy activities done within the home. According to self-report data, 78% of the mothers whose children participated in this study partook in literacy activities within the home, and there was quite a range of activities such as working with the alphabet, spelling games, reading books, and pointing to letters. This shows that some children were exposed to more learning than just the Alphabet Program circle time, or the instruction they received from their preschool teacher; however, this study is primarily limited to what children are doing during the circle times. Due to the minimal information about language and literacy practices in the home received from the demographic survey, this study is not
able to determine how these activities work together with what happened during circle time program.

Finally, the languages spoken within the home may have limited the results and their interpretation. Other than English, seven other languages were spoken by different participants in the study, resulting in a participant pool that may have been more linguistically diverse than the samples in the intervention research and the gesture research. This may have also been a factor that played a role in the lack of differences between the ASL Group and the other instruction group. Due to the fact that there is so little research on multilingual children and ASL, it is difficult to conclude that the learning of ASL alphabet signs would be different for multilingual children compared to monolingual children's learning. Thus, future studies should certainly attempt to look a little more closely at the home and school link in order to gain a better grasp at how the home activities may have affected the results.

**Conclusion**

Although this study did not show a significant evidence for ASL, the idea should not be abandoned. Furthermore we are unable to conclude that ASL is the reason behind the increases, but we can suggest that the Circle Time program, since it was prevalent in both groups, may have suggested benefits. Thus, if some of the limitations were eliminated, a study similar to this may find some significance. Rule, Dockstader, & Stewart (2006) state that all children learn in different ways, thus teachers should
incorporate different methods to teach skills like phonological awareness. It seems advantageous for preschool children to have opportunities to learn the alphabet in a circle time setting laden with different learning modalities such as (a) verbally making the sounds themselves and singing the alphabet, (b) hearing phonemes and letter names, (c) seeing the written cardboard letters and signed letters, and (d) using their bodies and their hands as they gesture. Phillips et al. (2008) explain that because phonemes do not occur independently in language, and since phonemes are usually tied with other phonemes to make words, teachers and children often do not get the chance to focus or elaborate on these features of language. Using a circle time similar to this could help children to see, say, and make the words, integrating their knowledge of the alphabet through various senses. Including methods for the children to move their bodies and hands in order to learn during a circle time program could be another benefit of incorporating sign language into a preschool curriculum.

This Circle Time Alphabet Program considers viable concepts that could quite possibly help preschool children strengthen the foundation for their early reading skills. Overall, parents, educators, policymakers, researchers, and a whole host of other people are committed to finding ways to better help and educate our children, especially in domains such as reading. Since success in reading is inherently tied to the competence of an individual, helping children improve their reading skills is a major goal for educators nationwide, especially for children in low-income populations. Thus, as research has indicated, phonological development, phonemic awareness, and letter recognition are essential for setting the foundation in building reading skills (Phillips et al., 2008;
Waddy-Smith & Wilson, 2003; Whitehurst & Lonigan, 2000; Woolsey, et al., 2006); it is imperative to start at the foundation in order to effectively help children better themselves. A program such as the Circle Time Alphabet Program can be a tool used to set a strong and developmentally appropriate reading foundation for children, and at an age as early as preschool. Thus, future studies should continue to evaluate in which ways gesture can help within the preschool, especially in regards to building early literacy and language skills.
APPENDIX A

The Developmental Continuum of Phonological Awareness
(adapted from Phillips, et al., 2008)
### American Sign Language Alphabet

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Sign A" /></td>
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<td><img src="image3" alt="Sign C" /></td>
<td><img src="image4" alt="Sign D" /></td>
<td><img src="image5" alt="Sign E" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6" alt="Sign F" /></td>
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<td><img src="image8" alt="Sign H" /></td>
<td><img src="image9" alt="Sign I" /></td>
<td><img src="image10" alt="Sign J" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
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<td><img src="image12" alt="Sign L" /></td>
<td><img src="image13" alt="Sign M" /></td>
<td><img src="image14" alt="Sign N" /></td>
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</tr>
</thead>
<tbody>
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<td><img src="image17" alt="Sign Q" /></td>
<td><img src="image18" alt="Sign R" /></td>
<td><img src="image19" alt="Sign S" /></td>
<td><img src="image20" alt="Sign T" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U</th>
<th>V</th>
<th>W</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image21" alt="Sign U" /></td>
<td><img src="image22" alt="Sign V" /></td>
<td><img src="image23" alt="Sign W" /></td>
<td><img src="image24" alt="Sign X" /></td>
<td><img src="image25" alt="Sign Y" /></td>
<td><img src="image26" alt="Sign Z" /></td>
</tr>
</tbody>
</table>
APPENDIX C

Example of Large Cardboard Print Letters
APPENDIX D

Participant Demographic Survey

Child’s name ___________________________  Child’s age ______
Child’s ethnicity/race ___________________________  Child’s sex ______
Number of siblings (brothers and sisters) ___________________________

Language(s) Spoken Within the Home: ___________________________

Gross Household Income (please circle the range that best applies):
  a) Less than $15,000
  b) $15,000-$30,000

Parents’ Highest Educational Level (E.g. High School, A.A. Degree, B.A. Degree, etc.):

Father: ___________________________  Mother ___________________________

Literacy Activities within the home:
  1. How often do you read with your child (circle the one that best applies)
     a. Never
     b. Rarely
     c. Once or twice per week
     d. At least once a day
     e. More than once a day
  2. Do you take part in language or literacy activities at home with your child (i.e. labeling games, spelling, etc)?  _____ yes  _____ no (please check one)
  3. Please specify the types of language or literacy activities you participate in ___________________________
APPENDIX E

Data Collection Sheet

<table>
<thead>
<tr>
<th>Letter Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Write a Y for yes or N for no to indicate whether the subject knows and can say the letter’s name)</td>
</tr>
<tr>
<td>A -</td>
</tr>
<tr>
<td>B -</td>
</tr>
<tr>
<td>C -</td>
</tr>
<tr>
<td>D -</td>
</tr>
<tr>
<td>E -</td>
</tr>
<tr>
<td>F -</td>
</tr>
<tr>
<td>G -</td>
</tr>
</tbody>
</table>

| Letter Sounds: |
| (Write a Y for yes or N for no to indicate whether the subject knows and can make the letter’s sound. For vowels, indicate whether they know the long sound (l) or the short sound (s)) |
| A_(l)__ (s) | H - | O_(l)__ (s) | V - |
| B - | I_(l)__ (s) | P - | W - |
| C - | J - | Q - | X - |
| D - | K - | R - | Y_(l)__ (s) |
| E_(l)__ (s) | L - | S - | Z - |
| F - | M - | T - | Total: |
| G - | N - | U_(l)__ (s) | |
REFERENCES


