ENHANCING PHONOLOGICAL AWARENESS IN KINDERGARTEN AND FIRST GRADE MONTESSORI STUDENTS

A Project

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in

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(Language and Literacy)

by

Janet Lynn Fagan

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ENHANCING PHONOLOGICAL AWARENESS IN KINDERGARTEN
AND FIRST GRADE MONTESSORI STUDENTS

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by

Janet Lynn Fagan

Approved by:

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Department of Graduate and Professional Studies in Education
Abstract

of

ENHANCING PHONOLOGICAL AWARENESS IN KINDERGARTEN
AND FIRST GRADE MONTESSORI STUDENTS

by

Janet Lynn Fagan

Statement of Problem

Research has shown positive correlational and causal relationships between a student’s phonological awareness and later reading achievement (Adams, 1990; Bradley, 1989; Bradley & Bryant, 1978, 1983, 1991; Ehri et al., 2001; Lonigan & Shanahan, 2008; National Institute of Child Health and Human Development [NICHD], 2000; U. S. Department of Education, 2012; Yopp & Yopp, 2009). Kindergarten and first grade students at the researcher’s school site showed a critical need for instruction in First Sound Fluency and Phoneme Segmentation Fluency according to initial reports by teachers using scoring criteria set by Dynamic Indicator of Basic Early Skills assessments (DIBELS; Good & Kaminski, 2002). One purpose of the study was to examine the DIBELS assessments to ensure proper administration and accurate scoring by the teachers, and then describe and compare the student’s
progress in the three classrooms at the beginning, middle, and end of year. A second purpose was to examine the school’s curriculum and Montessori teaching manuals for phonological awareness materials and lessons and to interview the teachers regarding their instructional practices for teaching and practicing phonological awareness tasks. The last purpose was to make research-based recommendations for enhancing the students’ phonological awareness and meeting California Common Core State Standards.

Sources of Data

Quantitative data for this study was collected from 95 students’ DIBELS assessment booklets. Qualitative data included descriptive analysis of the school’s curriculum and Montessori teacher’s manuals, and teacher interviews for instructional practices and any additional materials they used to teach phonological awareness skills.

Conclusions Reached

The study revealed significant weaknesses in students’ phonological awareness in identifying the first sound in a word at the kindergarten level and in segmenting the sounds in vowel-consonant and consonant-short vowel-consonant words. Across all three-kindergarten classes’ scores of First Sound Fluency rose from 32% of the students showing need for intensive or strategic instruction at the beginning of the year to 90% by middle of the year. This higher percentage at the middle of the year indicates instruction was not taking place. There were also differences in scores
between the classrooms. Phoneme Segmentation Fluency scores indicated 70% of kindergarten students needed intensive instruction, while 89.5% of first graders were in the intensive range, using the same criteria. Examining the school’s curriculum, teaching manuals, and through interviewing teachers, the researcher found:

1. Several tasks for phonological awareness were not being taught, including identifying the first sound in a spoken word, and

2. curricular support and professional development in assessing and teaching phonological skills needed to be enhanced.

Finally, recommendations are made for assessing and teaching the phonological awareness skills within California’s Common Core State Standards.

_______________________, Committee Chair
John Shefelbine, Ph. D.

_______________________
Date
ACKNOWLEDGEMENTS

The author wishes to acknowledge her husband, Larry, and daughters, Ashley and Kylie, for their patience, encouragement, and support. She further recognizes Dr. John Shefelbine for his guidance, support, hard work, and expertise. Lastly, she must acknowledge the support of her friends and family.
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Chapter 1

INTRODUCTION

Background

While the researcher was analyzing the quantitative data at her school site for EDTE 206, Leadership in Literacy, she discovered two areas of phonological awareness; (a) first sound fluency, and (b) phoneme segmentation that showed critical need for instruction for kindergarten and first grade students. Research has shown phonological awareness is found to be a good predictor of later reading achievement (Bond & Dykstra, 1967; Bradley, 1989; Bradley & Bryant, 1978, 1983, 1991; Ehri et al., 2001; Lonigan & Shanahan, 2008; National Institute of Child Health and Human Development [NICHD], 2000; Nithart et al., 2011; Uhry & Clark, 2004; U. S. Department of Education, 2012; Yopp & Yopp, 2009).

Statement of the Problem

It was evident through the data collected in Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002) there was a need to examine the current curriculum and instructional practices to improve reading, especially in the area on phonological awareness.

Purpose of the Study

The purpose of this work was to evaluate student’s proficiency in phonological awareness and to evaluate the curriculum and current instructional practices in the area
of phonological awareness and make research-based recommendations for enhancing these practices.

**Rationale**

Isolation of the initial phoneme and phonemic segmentation are critical areas of phonological awareness; students appeared not to be doing well on these two measures according to the data from DIBELS. Lack of phonological awareness may later lead to decoding and spelling difficulties (Bradley & Bryant, 1983; Ehri et al., 2001). Therefore it made sense to take action and investigate the problem and make recommendations for improving phonological awareness training in grades kindergarten and first.

**Methodology**

The kinds of data I collected were from kindergarten and first grade DIBELS assessments: First Sound Fluency and Phoneme Segmentation Fluency (Good & Kaminski, 2011). I provided descriptions of Montessori curriculum and other curriculum used to teach phonological awareness skills and reading. I interviewed the kindergarten and first grade teaching staff about their instructional practices in phonological awareness for their students.

**Limitations of the Research**

One limitation of the study outside the investigator’s control that may have affected data collection is that there were inconsistencies of scoring procedures found from the kindergarten and first grade teachers when administering the DIBELS assessments to their students. Another limitation was my inability to observe
instructional practices. Other limitations of the study included a small group of teachers serving populations with limited diversity, predominantly middle and upper middle class.

**Definition of Terms**

**Phonological awareness** - The ability to perceive or manipulate the sounds in words independent of meaning; phonological awareness has been identified as a key early literacy skill and precursor to reading (U. S. Department of Education, 2012).

**Phonemic awareness** - The awareness of sounds in spoken words and the ability to manipulate the sounds in spoken words (Wagner, Torgesen, Laughon, Simmons, & Rashotte, 1993), which is essential to developing later reading skills (Linklater, O’Connor, & Palardy, 2009). Phonemic awareness is a subset and the most difficult aspect of the larger category of phonological awareness (Adams, 1990).

**Phoneme** - The smallest units of speech that make a difference in communication. The English language has approximately 44 phonemes (Yopp & Yopp, 2009).

**Segmentation** - Segmentation is a technique for building phonemic awareness in which students break words into their component sounds, saying each sound separately as they tap them out or count them (Adams, 1990; Liberman, Shankweiler, Fischer, & Carter, 1974). For example, how many sounds are there in the word desk? Answer: d/e/s/k, four sounds.
**Phonics** - The study of the relationships between letters and their corresponding sounds; also used to describe an approach to teaching the fundamentals of reading that emphasizes sound-symbol relationships (Moats, 2010).

**Organization of Project**

Chapter 2 presents a review of phonological awareness research. Chapter 3 explains the design of the study, the participants, and descriptive measures of DIBELS assessment data, curriculum, and instructional practices. Chapter 4 summarizes the results of the evaluation. Chapter 5 is a discussion of these findings along with recommendations.
Chapter 2

LITERATURE REVIEW

This chapter reviews research concerning phonological awareness in young children. A definition of phonological awareness precedes a contrast between phonological and phonemic awareness. Next, two aspects of phonological awareness, the size of the sound unit and level of task difficulty, are examined. Then, there is a description of the standards for phonological awareness within the Foundational Skills of the Common Core Standards. This is followed by a review of current research on developing of phonological awareness and its relationship to literacy. Finally, sequences and methods in phonological awareness instruction are discussed.

**Phonological Awareness**

**Definition**

Phonological awareness is the ability to perceive, identify, manipulate, or analyze sounds in words autonomous of their meaning (U. S. Department of Education, 2012). According to the U. S. Department of Education (2012), phonological awareness has been identified as a key early literacy skill and precursor to reading. Uhry and Clark (2004) define phonological awareness as the ability to identify sounds in spoken speech and to understand the sequence of these sounds. This also includes the analysis of speech on specific levels, such as isolating words in a sentence (e.g., /We/-/love/-/to/-/read/-/books/), breaking words into syllables (e.g., /di/-/no/-/saur/ in *dinosaur*), separating onsets from rimes (e.g., /p/-/at/ in *pat* and /st/-/op/ in *stop*), and individualizing phonemes in words (e.g., /l/-/e/-/t/ in *let*). Yopp and
Yopp (2009) state phonological awareness is the ability to turn one’s attention from the meaning of the word to the sounds in the word. Their example includes the contrast of the words *caterpillar* and *train*. A phonologically aware child answers that the word *caterpillar* is longer, while a child who is not phonologically aware would choose *train*, because a train is concretely longer in length focusing on the meaning of the word. Hence, children who can detect and manipulate sounds in speech are phonologically aware.

**Aspects of phonological awareness.** Phonological awareness has two aspects and advances from general and simple to more complex forms (Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003). One aspect is the size of the sound unit. Moving from larger to smaller units increases the difficulty of the skills; the sound units include syllables, onset-rime, and phonemes. The second aspect is the type of manipulation or task exerted upon the sound units and subsequent performance ability of the child. Manipulations include blending sounds to make words and syllable splitting, segmenting words into smaller sound units, and adding, deleting, or substitutions of sounds within words (e.g., dookies for cookies), or switching sounds from words (Adams, 1990; Snow, Burns, & Griffin, 1998; Yopp & Yopp, 2009). These different kinds of manipulation are called phonological awareness tasks or skills.

**Phonemic awareness.** Phonemic awareness is a subset and the most difficult aspect of the larger category of phonological awareness units (Adams, 1990). Phonemic awareness is the awareness of phonemes, the smallest units of speech
sounds in spoken words, and involves the ability to manipulate these sounds in spoken words (Wagner et al., 1993). It is essential to developing later reading skills (Linklater, 2009). Snow et al. (1998) understood that for learning an alphabetic language, such as English, phonemic awareness gives children levels of understanding that spoken language can be analyzed into smaller units as strings of separate words, then sequences of syllables, and lastly phonemes. It is vitally important for children to obtain phonemic awareness because English is an alphabetic language and the acquisition of the alphabetic principle leads itself to the ability to make associations of letters to their corresponding sounds (Adams, 1990; Snow et al., 1998).

As already noted, a phoneme is the smallest unit of sound in a word. Minute differences between phonemes change the meaning of words as in the contrast of /t/ and /p/ in mat and map. Auditory discrimination tells us there is a difference between the two words. One phonemic awareness activity is being able to produce the final sounds in mat and map and being conscious of the particular sequence of sounds. Uhry and Clark (2004) propose that phonemic awareness is so difficult because often phonemes are coarticulated, or spoken together; with the phonemes that surround them, for example, the vowels and a few consonant sounds /m/, /r/, and /l/ are sonorants and can be held out at length. Yet, while one can hold out the sound /a/, the sound /t/ is an obstruent and the sound cut off or stopped quickly. Researchers state it is much easier to separate words by syllable than by individual phonemes.

Bruno et al. (2007) found that because of the nature of how listeners represent and process coarticulation, dyslexics have poorer performance on initial phoneme and
vowel portions. This implies their phonological representations are less well integrated than normally achieving readers.

**Common Core Foundational Skills and Phonological Awareness**

Shankweiler and Fowler (2004) concur the science of reading is seriously guiding decisions of how reading is best taught. Evidence from the past four decades has led to a near consensus of the positive effects that early awareness of the phonemic principle has upon literacy. Thereby, authorities are eliciting reform in curriculum and changes in reading assessment.

The Common Core State Standards for English Language Arts (CCSS ELA) are an effort to create a broad standard across the nation, rather than 50 different state standards, in order to ensure that all students are college and career ready in literacy by the time they leave high school (California Department of Education, 2011). Forty-six states have adopted the CCSS ELA, excluding Nebraska, Texas, Arkansas, and Virginia. California began the implementation process in March of 2012.

According to the National Governors Association Center for Best Practices and Council of Chief State School Officers’ website Common Core: State Standards Initiative, Foundational Skills are:

directed toward fostering students’ understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These foundational skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient
readers with the capacity to comprehend texts across a range of types and disciplines. Instruction should be differentiated: good readers will need much less practice with these concepts than struggling readers will. The point is to teach students what they need to learn and not what they already know—to discern when particular children or activities warrant more or less attention. (National Governors Association for Best Practices and Council of Chief State School Officers, 2013, p. 1, “English Language Standards—Reading: Foundational Skills”)

The kindergarten and first grade Common Core Reading Standards for Foundational Skills include print concepts, phonological awareness, phonics and word recognition, and fluency subsets (California Department of Education, 2011). Only the subset for phonological awareness tasks to be mastered by kindergarten and first grade students will be considered for this study (see Table 1).
Table 1

*California Common Core Reading Standards for Foundational Skills: Phonological Awareness-Kindergarten and First Grade*

<table>
<thead>
<tr>
<th>Phonological Awareness</th>
<th>Kindergarten</th>
<th>First Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demonstrate understanding of spoken words, syllables, and sounds (phonemes).</td>
<td></td>
</tr>
<tr>
<td><strong>Kindergarten</strong></td>
<td>a. Recognize and produce rhyming words.</td>
<td>a. Distinguish long from short vowel sounds in spoken single-syllable words.</td>
</tr>
<tr>
<td></td>
<td>b. Count, pronounce, blend, and segment syllables in spoken words.</td>
<td>b. Orally produce single-syllable words by blending sounds (phonemes),</td>
</tr>
<tr>
<td></td>
<td>c. Blend and segment onsets and rimes of single-syllable spoken words.</td>
<td>including consonant blends.</td>
</tr>
<tr>
<td></td>
<td>d. Blend two to three phonemes into recognizable words.</td>
<td>c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spoken single-syllable words.</td>
</tr>
<tr>
<td></td>
<td>e. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.)</td>
<td>d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).</td>
</tr>
<tr>
<td></td>
<td>f. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from *A Look at Kindergarten through Grade Six in California Public Schools: Transitioning to the Common Core State Standards in English Language Arts and Mathematics*, by California Department of Education, 2011, pp. 31, 57-58.

**Phonological considerations.** While Common Core has expectations of kindergarten students to add or substitute individual sounds (manipulating phonemes) to form new words, Adams (1990) stated that this skill “generally beyond the reach of
children before the end of first grade” (p. 72). Hence, there may be discrepancies between some Common Core expectations and students’ abilities.

**Developmental Progression of Phonological Awareness**

Lonigan, Burgess, Anthony, and Barker’s (1998) evidence suggests a developmental hierarchy of children’s sensitivity to linguistic units at differing levels of complexity. Four phonological awareness tasks (rhyme oddity detection, alliteration oddity detection, blending, and elision) were measured in two to five year old children, 238 from middle to upper income families and 118 from lower income. A subgroup of the older children in the middle to upper income received additional tests to measure word reading. The results indicated that as children’s age increased their phonological sensitivity also increased. Lower levels of phonological sensitivity (syllables) might serve as the basis to higher levels (phonemes). Phonological sensitivity, at different levels of linguistic complexity (e.g., syllables and phonemes), was substantially interrelated at each age and predicted older children’s word reading regardless of language skills and letter knowledge. Correlations between letter knowledge and children’s scores on phonological awareness tasks remained consistent suggesting that phonemic sensitivity is often associated with reading achievement because graphemes correspond to speech sounds in reading (Lonigan et al., 1998).

Further researching the ages in which children achieve specific phonological skills, recent data in Moats *Speech to Print* gave the rank order of phonological tasks from easiest to most difficult, with percentage of students able to complete each task successfully (Moats, 2010, p. 58). Moats cited data from Paulson’s (2004) dissertation.
Paulson (2004, as cited in Moats, 2010) identifies phonological awareness skills from easiest (blending syllables) to hardest (segmenting phonemes) and the percentages of four-year-old and five-year-old who show mastery on these tasks (see Table 2). Looking at the original source, there is one difference in Paulson’s data for *Alliteration Detection* of five-year-olds in Table 18, a measure of 53.90, to Table 21 with the measure as 61 (Paulson, 2004, pp. 68 & 99). In Moats’ data, it appears she tried to replicate Paulson’s Table 18 for descriptive data for phonological awareness subskills by age; however, Moats used the ranking data from Table 21 and neglected to take note the categories of subskills were not the same (Moats, 2010). Hence, Moats’ data is different from Paulson. Only Paulson’s data was used for creating Table 2 (see below). The data from both age groups sets the rank order. Since two different measures were given for alliteration detection (Paulson, 2004), the rank order of the sixth and seventh tasks vary according to which measure is used.
Table 2

*Rank Order of Phonological Awareness Subskills: Hierarchy of Tasks (Easy to Most Difficult) with Percentage of Students Able to Complete the Task Successfully*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Task</th>
<th>4-year-old</th>
<th>5-year-olds</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blending syllables</td>
<td>84%</td>
<td>92%</td>
<td>88%</td>
</tr>
<tr>
<td>2</td>
<td>Rhyme detection</td>
<td>58%</td>
<td>81%</td>
<td>70%</td>
</tr>
<tr>
<td>3</td>
<td>Segmenting syllables</td>
<td>62%</td>
<td>71%</td>
<td>67%</td>
</tr>
<tr>
<td>4</td>
<td>Alliteration categorization</td>
<td>53%</td>
<td>74%</td>
<td>63%</td>
</tr>
<tr>
<td>5</td>
<td>Blending onset/rime units</td>
<td>42%</td>
<td>57%</td>
<td>49%</td>
</tr>
<tr>
<td>6/7</td>
<td>Alliteration detection</td>
<td>32%</td>
<td>54%/61%</td>
<td>43%/47%</td>
</tr>
<tr>
<td>7/6</td>
<td>Rhyme production</td>
<td>31%</td>
<td>61%</td>
<td>46%</td>
</tr>
<tr>
<td>8</td>
<td>Blending phonemes</td>
<td>13%</td>
<td>29%</td>
<td>21%</td>
</tr>
<tr>
<td>9</td>
<td>Segmenting onset/rime</td>
<td>8%</td>
<td>21%</td>
<td>15%</td>
</tr>
<tr>
<td>10</td>
<td>Segmenting phonemes</td>
<td>3%</td>
<td>7%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Note.* Adapted from The Development of Phonological Awareness Skills in Preschool Children: From Syllables to Phonemes, Doctoral dissertation by L.H. Paulson, Copyright 2004 by the University of Montana.

**Relationship of Phonological Awareness to Literacy**

**Correlational relationships.** In correlational studies, a researcher obtains data on two or more variables without manipulation of either variable. The researcher then determines if the two variables are positively correlated, the variables are in the same direction or negatively correlated in opposite directions (Jelinek, 2013). Many important correlational studies have shown a positive correlation between

Twenty-seven individual projects were selected under the Cooperative Research Program in First-Grade Reading Instruction between 1964 and 1967 in hopes of obtaining empirical evidences as to the effectiveness of differing approaches to beginning reading and identifying any characteristics of the children, teachers, and schools, which led to a variation in reading ability (Bond & Dykstra, 1967). Bond and Dykstra found that the best predictor of a student’s year-end success on the Stanford Achievement battery was the ability to recognize and name upper and lowercase letters before entering their formal education. Most interesting to our study is that the next best predictor of reading achievement was the student’s ability to discriminate on an auditory phoneme test (Murphy & Durrell, 1964), hence phonological awareness.

Bradley (1989) and Bradley and Bryant’s (1978, 1983, 1991) seminal studies researched both the correlational and causal relationship between phonological awareness and reading achievement and warrant a close investigation. Bradley and Bryant (1978) reported that difficulties in grouping words heard aurally with common sounds might be a significant source of difficulty in learning to read. The research duo compared two groups of children of normal intelligence, who had the same reading (Neale range) and writing (Schonell) ability. Younger children, who had average reading skills (mean of 6 years, 10 months) were compared with those of older students (10 years 4 months), who were more than 18 months or more behind their age group for reading. Their design was to eliminate the traditional design flaw that the
difference, which may be found between reading disabled readers and non-impaired readers, might be the result of the reading disabled’s limited reading experience. Their design, being that the two groups had reached the same reading ability, ruled out that probability.

For each of the three series in Experiment 1, the child named the odd word from a series of words read aloud. Each series of words had six trials for a total of 18 trials in all. Series 1 included four monosyllable words with the medial sound in common; the last two phonemes were the same, while the odd word had a different final phoneme (e.g., weed, peel, need, deed). Series 2 had the middle phoneme as the difference (e.g., nod, red, fed, bed). In the third series these words had the same initial phoneme with the odd one different (e.g., sun, see, sock, rag). The position of the odd one out varied systematically in each series. Researchers made certain the children understood and could perform the oddity trials and eliminated forgetting words as a point of failure. Two children were eliminated who failed to recall four words at a time. Two additional measures were made by researchers to ensure validity and reliability: first, to hide the mouths of experimenter’s mouth from the child so that the shape of the mouth did not give clues and second, to pronounce each word with the same emphasis to eliminate clues (Bradley & Bryant, 1978).

While 91.66% of the 60 reading disabled readers made one or more errors, only 53.33% of the 30 non-impaired readers made errors. Similarly, 85% of the reading disabled readers made more than one error while 26.66% of the non-impaired readers did. Bradley and Bryant (1978) considered this a remarkable difference given
the reading disabled group was an average 3½ years older. The reading disabled readers were poorer on all three tasks; they showed a particular disadvantage concerning the same initial phoneme. Researchers stated that this relationship between first phoneme difficulty and these children’s reading and writing should be investigated further.

A clear developmental trend arose in non-impaired readers; those who made one or no errors were significantly older and had higher intelligence quotients, and reading and spelling ages. However, no trend occurred in reading disabled readers; the only significant difference was the few children who made one or no errors had a significantly higher spelling ability. Bradley and Bryant (1978) state, “This suggests that difficulties in organizing sounds may have particularly harmful effects on spelling among (reading disabled) readers” (p. 747).

Bradley and Bryant (1978) wanted further evidence to demonstrate that the differences between reading disabled and non-impaired readers in categorizing sounds were not due to the fact that experimenters may have involuntarily and unconsciously emphasized one word over the other during the trials. Experiment 2 was given to the same children. Ten words were spoken and after each word, children were asked to produce a word that rhymed. Despite their age and intellectual ability, reading disabled readers fared worse with this easier phonological task; 38.33% failed to produce a rhyming word compared to 6.66% for the non-impaired reader group, a “striking confirmation” of their difference in categorizing sounds (Bradley & Bryant, 1978). Overall, the researchers’ results strongly suggest that phonological processing
difficulty might be an important cause of reading failure. Bradley and Bryant’s (1978) study confirmed that children with reading disabilities are seriously insensitive to rhyme and alliteration.

Initially testing 118 four year olds and 285 five year olds at categorizing sounds, similarly to their 1978 study, children were asked to isolate the odd word out for first, middle, and end sounds in 30 trials (Bradley & Bryant, 1983). The researchers again controlled against memory being an issue, as in the previous study. In addition, they tested intelligence, verbal intelligence, and included a standardized math test to check that the results were specific to reading and spelling. At the end of four years, researchers again gave standardized tests for math, reading, and writing. Bradley and Bryant (1983) found there were high correlations between the initial sound categorization scores and the children’s reading and spelling over three years later:

In every case categorizing sounds accounted for a significant proportion of the variance in reading and spelling with these other factors controlled. So a definite relationship exists between a child’s skill in categorizing sounds and his eventual success in reading and spelling. (p. 419)

**Causal relationship between phonological awareness and reading.** The ability to categorize sounds based on common sounds involves attending to their constituent sounds, as does learning to read and spell. Bradley and Bryant’s (1983) study combined two methods, longitudinal and training studies. Longitudinal studies control for variables such as intelligence and a demonstration of genuine relationships,
but cause is not always certain. However, properly controlled training studies
demonstrate cause and effect relationship. Bradley and Bryant felt by combining the
two methodologies, the strength of each method would make up for the weakness of
the other, and would better establish the causal relationship. The first method was a
four-year longitudinal study that first measured ($N=403$) children’s skills at sound
categorization before they started reading and then related this data to their progress in
reading and spelling throughout and at the end of the study (Bradley & Bryant, 1983).
By the end of the study, the number of participants decreased to 368. The second
method was a study of intense training in sound categorizing or conceptual categories
given to a subsample of the larger group.

The second study (Bradley & Bryant, 1983) included 65 children selected from
the sample divided into four groups closely matched for age, verbal intelligence, and
their original sound categorization scores. The children were drawn from those with
lower scores, a minimum of two standard deviations below the mean. None of these
children could read at the beginning of the study. The training involved 40 individual
sessions over two years. Groups I and II were taught to categorize sounds by common
initial (hen, hat), medial (hen, pet), and final (hen, man) sounds using colored pictures
of familiar objects. Group II received further instruction by the addition of how the
common sound was represented by a letter for the other sounds. Groups III and IV
were controls. Group III was taught the same amount of sessions and time how to
categorize in conceptual ways such as animals or farm animals. Group IV received no
training.
The phonological awareness training had a considerable effect with regard to reading and spelling. Group I surpassed Group III by three to four months on standardized reading and spelling tests, suggesting a causal relationship. Group II succeeded even better in reading by eight to ten months, and spelling especially improved by 17 months comparing means of Groups II and III. The evidence suggests that explicit training in sound categorization (phonological awareness training) is even more effective when it involves an explicit connection to the alphabet. Analysis of covariance established that group differences were significant for reading, but not math. Post-tests showed Group II significantly better than both combined groups in reading ($p < .05$) and spelling ($p < .01$). There was no significant differences between Groups I and II in reading, but Group II did show significant differences in spelling ($p < .05$). There were no significant differences between control groups. Combining the longitudinal and training studies (Bradley & Bryant, 1983) provided empirical evidence that rhyme and alliteration had a powerful influence on children’s critical success in learning to read.

In a five-year follow-up (Bradley, 1989; Bradley & Bryant, 1991) those students who had participated in the sound categorization training when they were in primary grades showed “striking reading advantages” even though many of the control subjects had received substantial remediation, in those five years, (as cited in Pressley, 2006, p.116).

Congress asked the Director to the National Institute of Child Health and Human Development (NICHD) in 1997 to assemble a national panel to assess research
based knowledge and approaches in teaching children to read; thus, the National Reading Panel (NRP) was established. For the purpose of this study, only the subpanel on alphabetics lead by Linnea Ehri (NICHD, 2000), was used. The NRP reviewed 1,962 articles. The methodology permitted only experimental and quasi-experimental phonemic awareness training studies from refereed journals then subjected that data to meta-analysis. The broad question of the panel: “Does instruction in phonemic awareness improve reading? If so, how is this instruction best provided?” (pp. 1-3). The panel clarified that, “Phonemic awareness refers to the ability to focus and manipulate phonemes in spoken words” and that instruction and practice takes places aurally and orally (pp. 2-10).

The NRP reported phonemic awareness instruction, when compared with alternative forms of training, had large positive overall effects (0.86) helping children acquire phonemic awareness and helped them apply this skill to their reading and spelling (NICHD, 2000; Ehri et al., 2001). The panel also reported moderate overall effect sizes on reading outcomes (0.53) and spelling (0.59). Further, the effects were significant on follow-up tests several months (delayed post-tests 2 to 36 months) after training for reading words, pseudowords, as well as reading comprehension. Findings show teaching children to manipulate phonemes (segmentation, blending, reversing, deletion, identity, and categorization) was highly effective across all branches of literacy. Recommendations include that assessment of phonemic awareness skills should be done by teachers. In preschool and kindergarten, phonemic awareness instruction will benefit everyone. In first grade, nonreaders will benefit from more
instruction. Researchers Ehri et al. (2001) admonish it is better to err on the side of more instruction than none. Phonemic instruction is more effective when taught with letters. Expanding on the NRP’s earlier findings, Lonigan and Shanahan (2008) found that phonemic awareness was an important predictor of later literacy.

The U. S. Department of Education, Early Childhood Education Interventions for Children with Disabilities report (2012) reviewed 225 phonological awareness training studies. Only four randomized controlled trials (O’Connor, Jenkins, Leicester, & Slocum, 1993; Sweat, 2003; Tyler, Gillon, Macrae, & Johnson, 2011; Tyler, Lewis, Haskell, & Tolbert, 2003) met What Works Clearinghouse (WWC) evidence standards without reservations. The WWC review addressed student outcomes in seven domains: cognitive development, communication/language competencies, literacy, math achievement, social-emotional development and behavior, functional abilities, and physical well-being. Phonological awareness training in rhyming, blending and segmenting phonemes was found to have potentially positive effects on communication/language competencies. Phonological awareness was identified as a “key early literacy skill and precursor to reading” (U. S Department of Education, 2012, p. 1).

Nithart et al.’s (2011) one-year longitudinal study of the initial year of reading instruction aimed at assessing the development of phonological discrimination and awareness and the aspects of phonological memory on reading acquisition. Hierarchical regression analysis indicated that reading skills are predicted mainly by
phonological awareness measured at the kindergarten level and that phonological knowledge stored in long-term memory influenced word recognition.

In an effort to address instructional practices to children from birth to age five and improve literacy, the National Early Literacy Panel (NELP) was formed and followed the methodologies of the NRP study (NICHD, 2000). The NELP found the code-focused instructional interventions, which mainly focused on phonemic awareness instruction, reported statistically significant and moderate to large effects across a wide range of early literacy outcomes (Lonigan & Shanahan, 2008). Code-focused interventions consistently demonstrated positive effects directly on children’s conventional literacy skills. Interventions that produced large and positive effects on children’s code-related skills and conventional literacy skills were mainly conducted as one-on-one or small-group instructional activities. These phonological activities tended to be teacher-directed and focused on helping children learn skills by engaging in the use of those skills. These phonological activities generally required children to distinguish or manipulate (e.g., segment, blend, or delete) small units of sounds in words. Few of the interventions used rhyming activities as the primary teaching method. Teaching the alphabet (e.g., letter names or letter sounds) or simple phonics tasks (e.g., blending letter sounds to make words) seemed to enhance the effects of phonological awareness training (Lonigan & Shanahan, 2008).

**Instruction: General Findings**

While the NRP agreed children attained phonemic awareness efficaciously in all conditions, certain conditions were more advantageous for teaching phonemic
awareness (NICHD, 2000). Teaching one or two skills at a time was superior to three or more. Using letters in conjunction with phoneme manipulation helped normally developing readers and at-risk readers acquire phonemic awareness better. Snider (1995) also notes that teaching phonological activities with letter-sound correspondences have the greatest effect on reading and spelling, however, teaching letter sounds without the accompanying phonemic awareness training is not effective (Ball & Blachman, 1991). Learning was greater when taught in small groups rather than individually or whole classrooms. Treatments lasting five to eighteen hours produced greater effect sizes than shorter or longer times. Classroom teachers and computers were both effective in teaching phonemic awareness. Students in preschool and kindergarten showed larger effect sizes than first or higher-grade levels. Lastly, the NRP found teaching blending and segmenting exerted a significantly larger effect on reading development (NICHD, 2000).

The NRP results were clear that teaching children to manipulate the sounds in language helps them to learn to read familiar words and pseudowords, signifying that it helps students decode unfamiliar words. Phonemic awareness training is a key component that contributes significantly to the effectiveness of beginning reading and spelling instruction. Phonemic awareness training indirectly boosts reading comprehension, vocabulary, word knowledge, and memory for text. Self-evident to the panel was that teachers are most effective when they are enthusiastic in their teaching and select instruction that engages student interest and attention for optimal learning (NICHD, 2000).
**Instructional Sequence**

Researchers maintain differing views on sequencing phonological awareness when teaching children. Lundberg, Frost, and Peterson (1988) begin their training group of classrooms of six-year-olds with listening games and nursery rhymes for rhyming production. Next, word awareness activities including segmenting words in sentences proceed clapping out syllables. Identifying initial phonemes are next in the progression followed by final phonemes, and lastly synthesizing phonemes into words. While they never gave instruction in letter-sound correspondence, results show positive effects on phonemic tasks, including positive effects in reading and spelling in second grade, compared to the control classrooms.


According to Yopp and Yopp (2009) while instruction should progress from larger to smaller units of sound, it is not necessary to master one level before progressing to the next. In addition, concrete representation of sounds units (blocks or
chips) may make abstract manipulations easier for some children, while, pictures and objects can ease memory load.

**Recommended Instructional Sequence**

As mentioned earlier, phonological awareness has two aspects: size of the sound unit and type of manipulation exerted upon the sound unit, each affects the difficulty (Anthony et al., 2003). For instance, larger sound units are easier for young children to attend to than smaller, as blending is easier than moving phonemes (Adams, 1990; Snow et al., 1998; Yopp & Yopp, 2009). Many researchers believe instruction in word awareness should precede phonological awareness (Adams, 1990; Adams et al., 1998; Ehri, 1975; Karpova, 1955, as cited in Adams, 1990; Niessen, Strattman, & Scudder, 2011). This section includes the recommended sequence of instruction for word awareness and phonological awareness: word awareness, rhyme, alliteration, syllables, onset-rime, and phonemes with size of sound unit as an additional variable.

**Word awareness.** Word awareness develops a child’s mindfulness that our English language is made up of strings of words (Adams, 1990; Adams et al., 1998; Ehri, 1975; Karpova, 1955, as cited in Adams, 1990). Children should have instruction in word awareness until they understand that language consists of sentences of different lengths and that words themselves have different lengths (Adams et al., 1998). Adams et al. (1998) concur that this initial step helps children to discover that oral language is made from increasing smaller linguistic units. Adams (1990) contends that perhaps while children have an understanding of the words themselves, they may
not understand the word *word*. Conceivably counting words might be too much for them; the sentences are too long, or prosodics (patterns of pitch and timing) hamper their understanding.

Niessen et al.’s (2011) study of 40 four-year-olds examined whether tests of phonological sensitivity, print awareness, or word awareness accounted for a significant variability in preschool children’s invented spellings. Results indicated that word awareness counted as the greatest amount of variance in preschool children’s emergent writing and literacy development. The researchers conclude further research is needed (Niessen et al., 2011).

The seminal study on word awareness by Karpova, 1955 (as cited in Adams, 1990) reported three levels of word awareness. In the study of three to seven-year-old normal children, the youngest children focused on the number of idea units in each sentence. The stated example, when given the sentence “Galya and Vova went walking” the children at the first level stated there were two words: “Galya went walking, and Vova went walking.” The second level of word awareness, children separated subjects from predicates. For instance, in “Misha ran quickly” children responded there were two words, “Misha” and “ran quickly.” The third level, children began to break words into individual words, and occasionally confused syllables for words and often neglected to split prepositions away from content words or to count conjunctions (Karpova, 1955, as cited in Adams, 1990).

Ehri (1975) tested 35 children, ages 4.4 to 7.8, on four word consciousness tasks. A separate task measured reading ability using text for beginner readers to
distinguish beginning readers from pre-readers. Task 1 measured the ability of children to generate a sentence after an experimenter pronounced each word in random order. Results showed beginning readers were more successful than pre-readers were. Task 2 measured the ability to segment sentences into words and syllables by tapping and by laying down chips, and again the beginning readers more successful. Interestingly, when kindergarten children were given corrective feedback, their scores doubled as compared to small increases for preschool scores. Ehri (1975) likewise, found the same pattern of results as Karpova (1955, as cited in Adams, 1990), in that children displayed three different levels of word awareness. Task 3 measured the capability to identify the word distinguishing two otherwise identical sentences (e.g., The skinny girl peeled the orange. The girl peeled the orange.) Beginning readers were clearly more proficient at the task. Task 4 tested the ability to identify a certain word containing a particular syllable in a sentence (e.g., bas. A boy has a basket. Did you hear the sound? If so, which word did you hear the sound?). Ehri (1975) used both stressed syllables at the beginning of words and un-stressed syllables in the final position of words. Performance with first-syllable words was high among all groups. Nonetheless, there were marked results with final syllable words distinguishing beginning readers from pre-readers. These combined findings suggest beginning readers possessed advanced substantial conscious awareness of lexical and syllabic parts of speech, but this may also have been attributed to the beginning readers being older than pre-readers, and/or their cognitive skill, and that these features might have put limitations on her conclusions. Ehri proposes two schools of
thought for the results. One being that word awareness is acquired by and shaped by exposure to print, the second that word awareness is awakened by the consequences of reading print. Further, she suggested their knowledge might be part of their implicit knowledge of the structure of language.

**Word awareness instruction.** Recommended instruction in word awareness includes introducing the idea of sentences, introducing the concept of word, hearing words in sentences, exercises with long and short words, and words in context and out (Adams et al., 1998).

One activity for introducing the concept of a sentence is to begin by giving a simple explanation; such as, a sentence is like a very small story, which has to tell something, and has to name who or what it is telling about (Adams et al., 1998). A teacher may give an example sentence relating to a picture that is shown or may give examples with the subjects being the students in class (e.g., “Sam has blond hair.” “Serena is wearing pink slippers.”). After each example the teacher also states, “This is a sentence.” The children repeat the word “sentence” loudly in unison. After the teacher believes the children understand the concept, for clarification, the teacher should include some predicates without a subject (e.g., “is wearing yellow socks” “has a blue shirt”). After asking if each is a sentence, she should give a simple explanation that these phrases cannot be sentences because they have to name who or what it the sentence is about (e.g., “Who is this about?” “What does this say about __?”). This should be followed by practice with naming subjects only (e.g., “the students” “Mitch”) with the same explanation about sentences. This activity would be completed
in one day, but should be repeated until all students show mastery (Adams et al., 1998).

**Rhyme.** Sensitivity to rhyme appears to be acquired easily by most children, thereby is an excellent beginning to phonological awareness (Adams et al., 1998). Rhyme detection comes before rhyme production (Moats, 2010; Paulson, 2004). Rhyming alerts children to the similarities and differences in the sounds of words. According to MacLean, Bryant, and Bradley, (1987, as cited in Adams, 1990) “Perhaps the rudiments of phonemic awareness are seeded in children’s knowledge of nursery rhymes” (p. 79). Their study included 66 English children who were three years and three months old at the outset of the study. There were an equal number of boys and girls, half from middle-class homes and half from working-class homes, with their parents having various education levels. The children were asked to recite five popular nursery rhymes, such as “Baa Baa Black Sheep” and “Humpty Dumpty.” Every four months until the children reached four and one-half years, experimenters returned to assess their progress on oddity tasks, rhyme, alliteration production and lastly, the recognition of letters and words. Results of the study were considered “extremely provocative” because researchers found that early nursery rhyme knowledge strongly and specifically correlated to the development of more abstract phonological skills and emergent reading abilities (MacLean et al., 1987, as cited in Adams, 1990, p.80).

**Rhyme instruction.** Shared poetry is a way to teach rhyme implicitly to children. Teacher recitation, followed by practical application of rhyming, teaches and
encourages phonological awareness in children (Yopp & Yopp, 2009). For instance, a teacher would read “Hickory Dickory Dock” several times, followed by the children chanting the poem numerous times. Next, the teacher and students create a poem together they title “Hickory Dickory Dare.” The teacher scaffolds for the children where the mouse might run, perhaps to the chair. She asks the children where else the mouse might run, laughing to encourage and show appreciation for the responses.

Recommendations for teachers using poetry to stimulate phonological awareness in four and five-year-olds are to handpick a poem that has sound play as its dominant feature (Yopp & Yopp, 2002, 2009). They read the poem with enjoyment several times to the children. Their focus is on listening (aural), but teachers may display the poem later. They encourage the children to learn short poems so you may recite them together. Teachers draw attention to alliterations and other sound manipulations, encouraging children’s observations. They inspire children to create their own poems with extensions of verses or new versions of familiar poems. A class created book of poetry is a powerful addition to a classroom library, where students can revisit poems throughout the year (Yopp & Yopp, 2009).

For explicitly teaching rhyme to children, a teacher first models how to rhyme. As stated earlier Snider (1995) recommends a teacher say, “What word rhymes with /at/ and begins with / h/? Hat. Rhymes with /at/ and begins with /s/. Sat. Hat, sat, rat, cat. These words rhyme.” Practice follows direct instruction and may be more implicit in nature. For instance, use a board game in which students move ahead if they say a word that rhymes with a picture from the “draw” pile.
Alliteration. Alliteration is the ability to recognize repetition of initial sounds or word onsets (Irwin, Moore, Tornatore, & Fowler, 2012). For example, the alliteration of the “S” sound is “Sammy snake slithers.” Adams (1990) held that although sensitivity to rhyme seemed easy for most children, sensitivity to onsets or alliteration proved more challenging. To Adams it appeared that awareness of rimes might come from an understanding of syllables and rhymes; yet deeper understanding calls for an additional attention that comes from onsets or alliteration.

As stated earlier, in the Bradley and Bryant’s (1983) study on sound categorization (rhyme and alliteration), the reading disabled readers showed a particular disadvantage concerning the same initial phoneme. Cardoso-Martins, Mesquita, and Ehri, (2011) had two research questions in their study of 32 public preschool Brazilian children who did not know any consonant letter names:

1. Would children benefit from letter name knowledge and phonological awareness in learning letter-sound relationships? In addition,

2. could phonological awareness training boost students’ learning of sounds, particularly middle-sound letters?

For the focus of this section, we turn our attention to experiment two. All children were taught the sounds of the letters. The experimental group was taught to categorize with rhyme and alliteration, while the control group received instruction to categorize semantically. Analysis revealed results (ANOVA \(F(1, 18) = 49.34, p < .001, \eta^2_p = .73\)) that the children in the experimental group performed significantly better than controls.
on measures assessing phonological awareness, indicating that training was effective.

One limitation of the study was a small sample size so results may not be
generalizable to populations. While researchers remarked that instruction was
constrained and controlled and could be easy to replicate, they felt classroom
instruction might look very different (Cardosa-Martins et al., 2011). Turner (1998)
recommends Montessori teachers wait to initiate lessons with sandpaper letters and
direct instruction of teaching sounds, until certain of a child’s concept of initial
sounds.

**Alliteration instruction.** An example of direct instruction for teaching
alliteration, a teacher would first model alliteration, “Listen carefully, Sammy snake
slithers. Pay attention as I slowly emphasize the beginning sound and repeat the
sentence. Ssssammy ssssnake sssslithers. The sound you hear first is /s/ (hold out
sound to emphasis). Listen again. Ssssammy ssssnake sssslithers.” The teacher would
then practice this skill with her students using other short sentences emphasizing other
alliterations.

Implicitly, teacher can model for the children how to change the chorus of Old
MacDonald’s e-i-e-i-o to Me-Mi-Me-Mi-Mo (Yopp & Yopp, 2009). The teacher then
calls on a different child and encourages him to choose the next sound, and then they
all sing together. Children are eager to have their turn offering the next sound. Another
suggestion they have for preschool teachers is to use read aloud books focusing the
children’s attention to sounds; for example, *Los Niños Alfabetico* (Ayala & Isona-
Rodríguez, 1995) is rich in rhyme and alliteration. Another child-friendly suggestion is
after a read aloud of *Bearsie Bear and the Surprise Sleepover Party* (Waber, 1997), to place a large collection of stuffed animals in the center of the circle and the children take turns naming the animals for practice with alliteration (Horsie Horse, Doggie Dog, etc...). Researchers found that the children continued the animal name-play for several days afterward, reinforcing what they learned and as an activity they chose to continue to do (Yopp & Yopp, 2009).

Many children’s songs emphasize sound play (Yopp & Yopp, 2009). For instance, several songs made popular by Raffi, encourage the use of alliteration and rhyme. In “Willoughby Wallaby Woo” the first two verses set the pattern and then prompt children to use their own names, substituting the first syllable onset of their name for /w/. For example,

Willoughby Wallaby Woo,

An elephant sat on you.

Willoughby Wallaby Wee,

An elephant sat on me!

Willoughby Wallaby Wan,

An elephant sat on Jan.

Willoughby Wallaby Warry,

An elephant sat on Larry.

**Syllables.** Syllable awareness is a skill that occurs early in the development of phonological awareness and should be introduced after children have an understanding of separating words into sentences (Adams et al., 1998). Calling attention to the
movements in the jawbone for emphasis, as well as the sound, children are usually able to learn this skill (Adams et al., 1998). A more direct way might involve Elkonin boxes. The teacher says a word, and then repeats it slowly while pointing to the boxes, or adding a counter to each box, for each sound or syllable represented. Lieberman et al. (1974) assessed preschool, kindergarten, and first-grade children’s ability to tap out the number of segments in spoken utterances. Researchers found that, though the ability to segment both syllables and phonemes increased with grade level, analysis of phonemes was significantly harder and mastered later than syllables. Share and Blum (2005) found the body of the syllable a more accessible biphonemic unit than the rime. The preference did not appear only to be orthographic structure, but also spoken phonology.

*Syllables instruction.* Turner (1998) found the easiest task for Montessori students was syllabification, which then progressed in difficulty to onset-rime and then phoneme segmentation. Results of Turner’s (1998) qualitative study of preschool, kindergarten, and first graders, recommended that teachers include oral language games in addition to the Montessori approach, which combines a rich pre-reading multisensory alphabetic instruction. Activities suggested were word play, especially syllabification (chanting and singing), onset of words (alliteration and initial sound games), and rimes of words (rhyming, word-families, initial sound substitution, and making new words by adding new onsets (Turner, 1998). It makes sense to include both syllable blending and segmentation at the same time so students can get a better sense of the sound unit.
Yopp and Yopp (2009) report children enjoy games of blending syllables into words when read books aloud or while at morning circle. For instance, at morning circle a teacher would choose an object clearly within view of the students at first and say, “I am thinking of an object in our classroom, bas-ket.” The children would respond “basket” (Yopp & Yopp, 2009). When a teacher reads *The Very Hungry Caterpillar* (Carle, 1969), she might say “cat-er-pil-ler” and have the students blend the syllables together to form the word caterpillar (Yopp & Yopp, 2009).

For teaching separation of syllables, a teacher will tell the children to clap and count the syllables in their names while demonstrating (Adams et al., 1998). For instance, clap once as you say “Jan,” twice when you say “Ashley,” and three times when you say “Thaddeus.” Practice activities would include clapping each child’s name, slowing down to emphasize each syllable. Follow-up activities can include clapping names of classroom objects; progressing to phrases and finally sentences (Yopp & Yopp, 2009).

**Onset-rime.** Onset-rimes are smaller units within syllables; hence, onset-rime awareness is a more complex skill (Yopp & Yopp, 2009). All syllables have a rime unit, consisting of the vowel and any sound that follows in the syllable (Yopp & Yopp, 2009). The onset is the single consonant or blend that precedes the vowel (Ehri, et al., 2001). Not all words have onsets, though, as in the word *an*, for no sound comes before the vowel.

Treiman (1985) examined the effects of syllable structure on the development of phonemic analysis and reading in four experiments. Experiment 1 provided support
for the syllable structure model, whereby eight-year-olds more easily learned word games when treated as onset-rime than those that did not. Experiments 2 and 3 provided further support of the onset, four and five-year-olds more easily recognized a single consonant when compared with a consonant cluster in spoken or printed phonemes. Experiment 4 included printed nonsense words in CCV or CVC, with the latter assessed to be more easily decoded.

Although the importance of Treiman’s category of onset-rime (1985, 1991) had been widely accepted, studies that are more recent are focusing their attention to other languages and other levels of phonological awareness, and are not finding support for the relevance of the onset-rime distinction (Geudens & Sandra, 2003; Haigh, Savage, Erdos, & Genesee, 2011; Hulme, Hatcher, & Nation, 2002; Share & Blum, 2005). Examining the development of phonological awareness in other languages may inform the creators of early literacy programs and setting prerequisites for reading universally.

Share and Blum (2005) had concerns that onset-rime structures might not be universal constituents and hence chose Hebrew, which is more predisposed to body-coda (consonant-vowel + consonant) than onset-rime (consonant + vowel-consonant). Seventy-five Israeli kindergarten (N=37) and second grade (N=38) students of average socioeconomic status served as subjects and were measured in early literacy, letter naming, letter identification, reading and writing both familiar and unfamiliar words, and initial screening of a short second grade passage (Share & Blum, 2005). Measurements included an unstructured (open-ended) task dividing 10 spoken
monosyllabic CVC into two and two structured tasks; one required children to divide syllables into onset-rime, the other divide body-coda units. Interestingly, the idea of splitting wholes into parts was demonstrated concretely by tearing a piece of paper into two unequal parts. The children then split the remaining pieces in half themselves. A linguistic example of separating a two-word phrase into two words was followed by a further demonstration of splitting a bisyllabic word in two separate syllables.

In the unstructured task, 87% of the second grade students produced body-coda responses, running consistent with the orthographic structure. However, the kindergarten pattern showed the vast majority making separations of CV + VC, lending itself to more traditional Hebrew separations of two syllables. In the structured tasks, performance levels were high for second graders, many at ceiling; findings showed a significant statistical difference with body-coda separations compared to onset-rime. For the kindergarten sample, the task proved difficult and isolation of single phonemes unsuccessful (Share & Blum, 2005).

Share and Blum (2005) confirmed the claim that a level of phonological awareness does exist between syllables and phonemes and is more easily accessed by prereaders than the level of phonemes itself. Kindergartners were unable to isolate phonemes prior to beginning formal instruction in Grade 1, a conclusion reached nearly four decades ago (Liberman et al., 1974). Further, among preliterate children explicit awareness of phonemes is not acquired spontaneously and depends upon explicit instruction. Share and Blum (2005) conclude, “The current study adds to a growing body of evidence across a variety of languages that the special status of
onset–rime units in children’s early phonological awareness has been greatly exaggerated” (Discussion section, para. 7).

Geudens and Sandra (2003) study included 56 Dutch-speaking kindergarten and first grade students in northern Belgium who had all received basal phonological awareness instruction in rhyming and letter sounds while in preschool, but not phoneme segmentation, blending, writing, or reading. Researcher’s experiments failed to prove the relevance of the onset-rime distinction. First, the children found more ease with segmenting two phoneme syllables within the rime VC, than when reversed CV. Second, students did not find substitution of a phoneme in a CV easier than VC. Third, when segmenting CVC’s, CV strings were found more frequent than rimes.

Hulme et al.’s (2002) results of a short-term longitudinal study found measures of phoneme awareness better predicted reading skill than onset-rime in five and six year old prereaders. Likewise, studies in second language reading acquisition, regression analysis indicated that English phoneme manipulation in kindergarten was a significant predictor of both French and English second grade reading outcomes in comparison to onset-rime awareness (Haigh et al., 2011).

**Onset-rime instruction.** When beginning instruction of onset-rime, students should be taught to blend first. For example, *sss-at* together to form the spoken word *sat* (Yopp & Yopp, 2009). Later instruction to separate the *m* from the rime *ap* to say *mmm-ap*. Songs lend themselves to student’s word play by changing the onset or the rime (Yopp & Yopp, 2009). For instance, when singing “Old MacDonald” the onset of */b/* for the reprise “Be-bi-be-bi-bo” and the chorus of animal sounds, about a pig...
becomes “With a boink boink here and a boink boink there…” Emphasizing rime in “Down by the Bay” a moose is kissing a goose and llamas are wearing pajamas.

Ericson and Juliebö (1998) recommend teaching children to segment C:V words first (e. g., n-o), followed by V:C words (e. g., i-t), then progress to the more difficult C:VC (e. g., s-at). Then children should be taught to segment three phoneme words C:V:C (e. g., s-i-t).

**Phonemes.** Phoneme or phonemic awareness is the ability to think about and manipulate the smallest sounds of speech (Yopp & Yopp, 2009). It involves knowing that a spoken word such as *fight* consists of three sounds (/f/ /igh/ /t/). Sometimes sounds are represented by combinations of letters instead of a single letter, as in the three sounds of *fight* written by using five letters.

Researchers agree children who are not aware and capable of manipulations of phonemes have difficulty reading a written system that is based on sounds (Adams, 1990; Ehri et al., 2001; Haigh et al., 2011; Hulme et al., 2002; NICHD, 2000; Lundberg et al., 1998; Pressley, 2006; Shankweiler & Fowler, 2004; Yopp & Yopp, 2002, 2009). Several studies found performance on phoneme segmentation tasks were predictive of success in reading (Ball & Blachman, 1991; Blachman, 1984; Bradley & Bryant, 1983; Liberman, Shankweiler, Fischer, & Carter, 1974; Lundberg et al., 1988. Muter, Hulme, Snowling, and Taylor (1997) found in their two year longitudinal study that phoneme segmentation, phoneme identification, and phoneme deletion, was strongly correlated with achievement in reading and spelling at the first year, although rhyming, detection and production, was not. Shankweiler and Fowler (2004) state
phoneme awareness training, “can reduce the incidence and severity of reading
difficulties in both advantaged and disadvantaged youngsters” (p. 489). Unfortunately,
bringing research findings into the classroom is challenging, given many teachers are
not trained to evaluate research (Shankweiler & Fowler, 2004).

**Phoneme instruction.** The following table (see Table 3) displays phoneme
tasks: isolation, identity, categorization, blending, segmentation, and deletion; which
are used to assess and improve phonemic awareness through instruction and practice
(Ehri et al., 2001; NICHD, 2000).

Table 3

**Tasks for Assessment and Improvement in Phoneme Awareness through Instruction and Practice**

<table>
<thead>
<tr>
<th>Phoneme Task</th>
<th>Description</th>
<th>Example and Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Isolation</td>
<td>Individual sounds in words are recognized.</td>
<td>“Tell me the first sound in tape.” (/t/).</td>
</tr>
<tr>
<td>2) Identity</td>
<td>A common sound is recognized in different words.</td>
<td>“Tell me the sound that is the same in dog, dirt, and date.” (/d/).</td>
</tr>
<tr>
<td>3) Categorization</td>
<td>Odd sound in a series of three or four words is recognized.</td>
<td>“Which word does not belong? Pat, push, rag, pep.” (rag).</td>
</tr>
<tr>
<td>4) Blending</td>
<td>Forming a recognizable word from a sequence of separately spoken sounds.</td>
<td>“What word is /b/ /i/ /g/?” (big).</td>
</tr>
<tr>
<td>5) Segmentation</td>
<td>Separating a word into its sounds by tapping out, counting the sounds, or by pronouncing each constituent sound.</td>
<td>“How many sounds in rug? (3, or /r/ u/ /g/).</td>
</tr>
<tr>
<td>6) Deletion</td>
<td>Recognition of the word that remains after a particular phoneme is removed.</td>
<td>“What is snail without the /s/?” (nail).</td>
</tr>
</tbody>
</table>

*Note. Adapted from the NRP report of the Subgroups, chapter 2 “Alphabetics,” Part 1 “Phonemic Awareness Instruction,” p. 2.*
Adams et al. (1998) recommend beginning phoneme instruction with activities concentrating on initial phonemes first and then final sounds. Since speech often runs together through articulation (Adams et al., 1998; Uhry & Clark, 2004), initial phonemes are the easiest to isolate and are the first critical step in phonemic awareness (Adams, 1990; Adams et al., 1998). When introducing the concept of phonemes, Adams et al. (1998) endorse the use of concrete materials such as blocks and begin instruction with only two sound words such as *day*, *bee*, and *bow*. After isolation and identifying initial phoneme activities, students then begin taking a sound away (analysis) and adding a sound (synthesis) before final phonemes are addressed.

When explicitly teaching students how to blend phonemes, Snider (1995) recommends teachers begin by modeling how to continuously blend sounds into words. For example, “Listen. I am going to say a word very slowly, and then I will say it quickly. Sssssssssuuuuuuuuunnnnnnn. Sun. Now I would like you to try saying the word quickly after I say the word slowly. Hhhhhhhhaaaaassssssss.” A practice activity could follow such as students will draw a picture of the word a teacher says slowly. To teach segmentation, Snider (1995) endorses a "Say-it-and-move-it" activity to model how to say the sounds in a word. For example, "Watch me. Every time I hear a sound, I am going to move one of these blocks. Mmmmmmaaaaaannnnnn.” Phoneme substitution instruction would also begin with modeling. The teacher would say, “If say the word *sat* and then change the first sound to */f/*, the new word will be *fat*. They end with */at/*. *Sat-fat.*” For a practice activity or extension, students make a list of words that end in */at/* and then read their lists aloud to their peers and teacher. Blending and
segmentation of phonemes are critical phonemic awareness tasks. Blending is important because it sets the stage for fluent reading, while segmentation is a precursor for spelling. Manipulation of phonemes such as adding, dropping, and switching are much harder tasks for children to master.

One activity for implicit instruction of substituting initial sounds is for a teacher to use a book the children are familiar with and deliberately change one of the nouns as she reads aloud (Yopp & Yopp, 2009). For instance, while reading *The Very Hungry Caterpillar* (Carle, 1969) the teacher would say, “In the light of the moon a little egg lay on a ‘jeaf’” (Carle, 1969, p. 1). The students will want to correct the teacher immediately and state, “No, leaf!” Yopp and Yopp (2009) stated that while some of the children were not able to detect and engage in the sound manipulations themselves, they were “delighted with the activities nonetheless and benefited from exposure to such language play” (p. 2). A second initial sound activity, Yopp and Yopp (2009) suggest, “I spy” in which a teacher says, “I spy with my little eye something you are all wearing that begins with /sh/.” Several children will be quick to offer, “Shoe!” The teacher should immediately praise the effort and then dramatically emphasize the stressed phoneme by saying, “Yes, shoe begins with /sh/. Listen carefully shhhhhhhhroe.”

**Instructional Methods: Explicit versus Implicit**

Researchers maintain differing views on instructional methods when teaching PA to children.
Explicit instruction. Snider (1995) states, “Effective instruction in phonemic awareness needs to be directly and systematically taught in order to ameliorate reading disabilities among at-risk youngsters” (p. 443). Snider states instructional time must be divided between new learning and practice activities. She suggests effective instruction must include modeling before practice and careful sequencing from easy to hard:

This is how a teacher might model rhyme: "Listen, I can rhyme with /at/ and begin with /fl/. Fat. I can rhyme with /at/ and begin with /sl/. Sat. I can rhyme with /at/ and begin with /ml/. Mat." This is an example of how a teacher might explain rhyme. "Rhyming words always have the same ending sound. Rat and sat rhyme because they both end in /at/, but they start differently." (Snider, 1995, p.443)

Engelmann (1997) asserts that efficient instruction must be highly structured to permit teachers to present large amounts of practice in the shortest amounts of time rather than is possible through natural settings and incidental interactions.

Implicit instruction. Yopp and Yopp (2009) emphasis phonological awareness activities should be developmentally appropriate for young children. They suggest instruction through “riddles, games, singing, and dramatization will bring on laughter, silliness and experimentation” (Yopp & Yopp, 2009, p.8). While these researchers emphasis play, which is often, called implicit instruction, they are emphatic that phonological awareness is serious business and recommend intentional instruction.
When considering games to enhance phonological awareness, select games that stimulate language play, are enjoyable and amusing, and not stressful (Yopp & Yopp, 2009). Encourage children’s participation, but understand that some will learn by observing. Adams et al. (1998) prefer the use of goal-oriented games in which children should feel they are playing a game even while they are learning.

**Studies of the two approaches.** Cunningham (1990) compared explicit versus implicit instruction in phonemic awareness. Group I received a “skill and drill” (explicit) procedural approach in segmentation and blending. In contrast, Group II had the addition of a “metalevel” (implicit) approach with discussion of the value, application, and usefulness of phonemic awareness for the activity of reading in addition to segmentation and blending instruction. Control groups were in place for each experimental group. Forty-two kindergarten and 42 first-grade children (14 children in each of the experimental groups or control group) received training twice a week for ten weeks. The results of the training study provided evidence that phonemic awareness is causally related to reading achievement at the beginning stages of reading development (Cunningham, 1990). Additionally, while an improvement in reading was obtained for both experimental groups, the metacognitive (implicit) method performed significantly better at a measure of reading achievement. While Cunningham’s results favor implicit instruction, the researcher of this study would not term the second approach as implicit instruction, but as explicit instruction with the addition of deep, relevant explanations of when, where, why, and how phonemic awareness applies to reading.
Pressley (2006) upholds that, regardless of the method used, phonemic awareness instruction has been successful in promoting phonemic awareness and positively affects subsequent reading achievement. The NRP expressed methods in teaching phonemic awareness in the classroom are not clearly specified by research and a teacher should evaluate the methods they use with the success of their students (NICHD, 2000). Snider recommends that implicit approaches may be used along with explicit activities, but that implicit should not replace explicit. It appears the research is inconclusive about the best instructional approach for phonemic awareness. There is however, agreement that phonemic awareness instruction is critical for future reading achievement (Adams, 1990; Cunningham, 1990; Ehri et al., 2001; Lonigan & Shanahan, 2008; O’ Conner et al., 1993; NICHD, 2000; Snider, 1995; Sweat, 2003; Tyler et al., 2003; Tyler et al., 2011, Yopp & Yopp, 2009).

The researcher of this project maintains it is the art and skill of a teacher that can make an important task of learning seem like a game to a child or make a structured activity fun. For example, consider the engagement and enjoyment of a child comparing two methods for practicing addition.

1. Complete 50 one and two digit addition problems on a piece of paper; or,
2. Take turns with a partner rolling two dice, adding the factors to produce a sum, while keeping a cumulative sum with the goal of the game to reach 100 first.

Which would you prefer to do and which do you feel children would prefer?

**Summary of phonological awareness.** Phonological awareness is the ability to perceive, identify, manipulate, or analyze sounds in words autonomous of their
meaning. Size of the unit and type of task or skill are the two aspects of phonological awareness. Phonemes are the smallest units of speech. Phonemic awareness is the ability to attend and manipulate phonemes and the most difficult aspect or phonological awareness. While there is a difference of opinion to the best method for teaching phonological awareness, experts in the field agree on the importance of teaching phonological skills to children for the critical impact it has upon literacy.
Chapter 3

METHODOLOGY

This chapter first describes the design of the study and its participants. This is followed by a description of the quantitative measures used in the DIBELS assessments. Next is a description of how the students’ instruction was examined. This included the school’s curriculum guide teaching manuals, and contents of the teachers’ interviews. This chapter concludes with a description of the study’s procedures.

Design

This study was a descriptive mixed-methods research design. It included a nonexperimental quantitative component using descriptive statistics for analyzing the assessments for DIBELS, which measured the proficiency in phonological skills for the students. The descriptive statistics included means, standard deviations, and percentages. Equally important to the design of the study is the qualitative portion of the study, which evaluated the curriculum guide, teacher’s manuals, and instructional practices within the researcher’s natural setting based upon best practices and current research discussed in the literature review.

The study maintained internal validity and reliability if the DIBELS assessments were administered and scored in the same manner. The study may not have had strong external validity because the findings may not be generalizable to the public, because schools may have different instructional practices and curriculum than that of the school that was studied. However, for Montessori programs, which used the
same curriculum and had similar instructional practices, the results may be
generalizable to their schools’ population. The study’s internal reliability is strong if
the DIBELS assessments were followed by all teachers in the same way and were
conducted in a trustworthy way.

The rationale for choosing a descriptive mixed-methods design was to examine
the curriculum and instructional practices through qualitative measures, which might
clearer explanations for the student’s scores on DIBELS than the quantitative data by
itself.

**Participants**

**Teachers**

The participants included five teachers in three classrooms at the researcher’s
school site. For the purpose of this study, teachers and classrooms were given
numerical numbers for identification. Classroom 1 was a kindergarten and first grade
combination; the teachers were named Teacher 1 and Teacher 2. Classroom 2 was also
a kindergarten and first grade combination and included Teachers 3 and 4. While
Classroom 3, was a half-day straight kindergarten with one teacher, Teacher 5. This
study took place over a two-year span. Since there were three major personnel changes
to classrooms 1 and 3 in 2012-2013, to minimize confusion in the study, the
interviews concentrated on the 2011-2012 teachers. The five teachers of the 2011-
2012 school year, became the participants for interviews to investigate the curriculum
and instructional practices, with an emphasis on phonological awareness. Each of the
three classrooms had a teacher’s aide, but they were not participants of the study.
**Overall teacher demographics.** All teachers were middle-class, white females between the ages of 28 and 62. Four of the participants were born and raised in the United States. Teacher 3 was born and raised in South Africa, with Afrikaans being her first language, and dually literate in Afrikaans and English. She has been in the United States for about 15 years. The teachers varied in their years of credentialed teaching experience, Montessori teaching experience, and Montessori credentials; specific information can be found in Table 4.

Table 4

*Teacher’s Experience and Credentials*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Classroom and grade level</th>
<th>Years at school</th>
<th>Level of Montessori credential</th>
<th>California credentialed experience</th>
<th>Montessori experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 (K-1)</td>
<td>11</td>
<td>3-6 and 6-9</td>
<td>11</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>1 (K-1)</td>
<td>13</td>
<td>3-6 and 6-9</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>2 (K-1)</td>
<td>11</td>
<td>3-6</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>2 (K-1)</td>
<td>4</td>
<td>6-9</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>3 (K)</td>
<td>5</td>
<td>Birth-3 and 3-6</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

**Student Demographics**

While the student’s data from DIBELS was examined, the students were not observed or interviewed for this study. Students (n=95) attended a Montessori charter school in the foothills of the Sierra Nevada. As shown in Table 5, the school serves predominately white, middle-class families. According to school records, two of the K/1 students spoke Korean as their first (home) language, with all other students having English as their sole language.
Table 5

*Distribution of Ethnicity*

<table>
<thead>
<tr>
<th>Ethnic Background</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White/Not Hispanic</td>
<td>69 %</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13 %</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>11 %</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>5 %</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>2%</td>
</tr>
<tr>
<td>African American</td>
<td>0%</td>
</tr>
</tbody>
</table>

According to school records, the percentage of families at this school site (K-8) who qualified for a Free and Reduced Lunch Status and Aid to Families with Dependent Children historically ran at a 9%. However, the figure rose to 11%, which may have demonstrated the effect of the economic crisis beginning in 2010. All parents of the school were high school graduates, and 98% had varying levels of college (see Table 6), with roughly 75% attaining college degrees and/or post-graduate work.
Students range in age at the beginning of the study from four years and eleven months in kindergarten to seven years and five months in first grade. Classroom configurations are shown in Table 7.
Table 7

*Classroom Configurations*

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Number of students (n=95)</th>
<th>Kindergarten (boys/girls)</th>
<th>First (boys/girls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38</td>
<td>14 (7/7)</td>
<td>24 (13/11)</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>13 (6/7)</td>
<td>24 (14/10)</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>20 (7/13)</td>
<td></td>
</tr>
</tbody>
</table>

**Measures**

**Quantitative**

**Overview.** “DIBELS was designed for use in identifying children experiencing difficulty in the acquisition of basic early literacy skills, in order to provide support early and prevent the occurrence of later reading difficulties” (Dynamic Measurement Group, 2013, What are DIBELS? section, p.1). The College of Education at the University of Oregon founded the first web-based data system, DIBELS Data System, to support the DIBELS measures (University of Oregon Center on Teaching and Learning (UOCTL), 2013). According to Cummings, Kennedy, Otterstedt, Baker, and Kame'enui (2011), DIBELS Next Benchmark Assessments percentile rankings are based on a “nationally representative convenience sample of school from the DIBELS Data System” (p. 2).
As stated by Good and Kaminski (2011), “DIBELS benchmark goals are empirically derived, criterion-referenced target scores that represent adequate reading progress” (p. 25). Assessing student performance on early literacy skills can help distinguish children who are on track to become successful readers from those who are likely to struggle (Good & Kaminski, 2011). During the researcher’s study, DIBELS changed their 2010 and 2011 recommended benchmark goals and assessment schedule in 2012 (Dynamic Measurement Group, 2010; Good & Kaminski, 2011; UOTCL, 2012a) as displayed in Table XX for kindergarten and in Table XX for first grade. The data suggests that earlier benchmarks were much too low. DIBELS Data System sighted four reasons for new recommended benchmark goals (UOCTL, 2012b). One, an external review showed the Dynamic Measurement Group’s former goals did not meet the validity standards specified by the National Response to Intervention. Two, school and student samples needed to reflect U. S. population as a whole, not just the schools its data system served. Three, former goals misclassified many students who needed additional instruction support. Four, rather than a single study which provided generalizability, multiple studies should be used to evaluate reliability, validity, and utility for DIBELS Next.

According to Good (2002), the absolute criterion references for measures of instructional support for each subtest are intensive, strategic, and core. Those who need intensive instructional support are deficient in that skill and seen at-risk, with the odds of 10%-20% of students achieving subsequent early literacy goals (Good, 2002; Good & Kaminski, 2011). Students who need strategic instructional support are
emerging in the skill and have some risk, with 40%-60% reaching literacy goals (Good, 2002; Good & Kaminski, 2011). Students who need core instructional support show an established skill and have a low risk, with 80%-90% of students attaining subsequent reading benchmarks (Good, 2002; Good & Kaminski, 2011).

**DIBELS measures.** The two measures of DIBELS Next that assess phonological awareness, specifically phoneme awareness, are First Sound Fluency (FSF) and Phoneme Segmentation Fluency (PSF) (Good, 2002; Good & Kaminski, 2011). According to the University of Oregon Center on Teaching and Learning (2013), both measures are standardized, individually administered assessments of phonological awareness. *DIBELS Next Assessment Manual* (Good & Kaminski, 2011) gives a detailed description for administration of each subsection.

**First Sound Fluency (FSF).** FSF is a standardized, individually administered measure of phonological awareness that assesses a student's ability to identify the initial sound in an orally presented word (Good & Kaminski, 2011). The FSF assessment is given at the beginning and middle of kindergarten (Cummings et al., 2011; Good & Kaminski, 2011).

The testing procedure for FSF can be summarized as follows: Before the test begins, to provide support, modeling, and leading the student toward a correct response, the teacher reads standardized instructions for three practice items and provides scripted feedback to student for correct or incorrect responses. Next, for one minute, the teacher says to the student a series of up to thirty words, one at a time, and asks for the first sound in the word. The teacher circles the corresponding sound,
group of sounds, or inaccurate response the student states on the scoring page. Students receive either two points for saying the first phoneme (e.g., saying the /s/ sound as the first sound in the word *slice*), one point for saying the initial consonant blend (e.g., /sl/ or /slie/), or zero points for an incorrect response. The total score reflects a child’s skill of isolating initial phonemes.

**Phoneme Segmentation Fluency (PSF).** PSF tests a child's ability to segment three- and four-phoneme words into their individual phonemes (Good & Kaminski, 2011). The PSF measure has been found to be a good predictor of later reading achievement (Kaminski & Good, 1996). As shown in Table 8, the PSF had been administered at the middle and end of the year for kindergarten prior to 2012 (Good & Kaminski, 2011). New recommendations are for the middle of the year, but optional and endorsed for end of the year (UOCTL, 2012b). Optional would infer that the assessment is not given to those students who had met core, but would be given to those who had not reached the core benchmark. While first graders had assessed at the beginning of the year prior to 2012 (Good & Kaminski, 2011), the new recommendation is optional and endorsed in the beginning of the year (see Table 9) (UOCTL, 2012b).

We do not provide a recommended goal for PSF at either the end of kindergarten or at the beginning of Grade 1. Phonemic awareness skills are an essential part of early literacy instruction; however, the value of PSF as a tool for universal screening beyond kindergarten is not supported in our research results. Future research is needed to determine if other types of phonemic
awareness tasks may add value to the other DIBELS Next measures that are in place for grade K. (UOCTL, 2012b, pp. 8-9)

Table 8

_DIBELS Next Recommended Kindergarten Benchmark Goals for 2010-2011 and 2011-2012_

<table>
<thead>
<tr>
<th>Measure</th>
<th>Instructional Support</th>
<th>2010-2011</th>
<th>2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BOY</td>
<td>MOY</td>
</tr>
<tr>
<td>First Sound Fluency (FSF)</td>
<td>Core</td>
<td>10+</td>
<td>30+</td>
</tr>
<tr>
<td></td>
<td>Strategic</td>
<td>5-9</td>
<td>20-29</td>
</tr>
<tr>
<td></td>
<td>Intensive</td>
<td>0-4</td>
<td>0-19</td>
</tr>
<tr>
<td>Phoneme Segmentation Fluency (PSF)</td>
<td>Core</td>
<td>20+</td>
<td>40+</td>
</tr>
<tr>
<td></td>
<td>Strategic</td>
<td>NA</td>
<td>10-19</td>
</tr>
<tr>
<td></td>
<td>Intensive</td>
<td>0-9</td>
<td>0-24</td>
</tr>
</tbody>
</table>

*Note. BOY = beginning of year; MOY = middle of year; EOY = end of year; NA = not administered during this assessment period; OE = optional, endorsed, no benchmarks stated. Adapted from “DIBELS Next Benchmark Goals and Composite Score,” by Dynamic Measurement Group, 2010, December 1, retrieved from [https://dibels.uoregon.edu/docs/DIBELSNextFormerBenchmarkGoals.pdf](https://dibels.uoregon.edu/docs/DIBELSNextFormerBenchmarkGoals.pdf).*

Table 9

**DIBELS Next Recommended First Grade Benchmark Goals for 2010-2011 and 2011-2012**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Instructional Support</th>
<th>BOY</th>
<th>MOY</th>
<th>EOY</th>
<th>BOY</th>
<th>MOY</th>
<th>EOY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phoneme Segmentation</td>
<td>Core</td>
<td>40+</td>
<td>NA</td>
<td>NA</td>
<td>ONE</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Fluency</td>
<td>Strategic</td>
<td>25-39</td>
<td>NA</td>
<td>NA</td>
<td>ONE</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Intensive</td>
<td>0-24</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>


Summarizing the standardized directions for administration of PSF, a teacher reads one example, saying a word and modeling each of the sound segments. “Listen to me say all the sounds in the word ‘fan.’ /f/ /a/ /n/” (Good & Kaminski, 2011, p. 56). Then the teacher prompts a student to try with another word, and gives scripted feedback for correct or incorrect responses. Testing then begins by presenting up to 20 words, one at a time, for one minute. The teacher underlines each correct sound segment as the students responds. “For example, /m/ /ma/ /a/ /an/ /n/ are all correct parts of the word man” (Good & Kaminski, 2011, p. 57).

Three points is given for full segmentation, /m /a/ /n/ for the word man. Partial segmentation, as in the onset-rime /m/ /an/, or /ma/ /n/, receives two points. The
student receives one point for each different, correct sound segment. Incorrect sound segments receive zero points. The total score is the number of correct sound segments. Good and Kaminski (2011) prefer for kindergarten students to completely segment words at the phoneme level, although partial credit is given to those developing in their phonemic awareness.

**Effects of the data change.** Overall, referring to the tables above, kindergarten benchmarks rose significantly, more than doubling in most areas, to higher benchmarks for FSF from 2010-2011 to 2012 (see Table 8). For illustration, while a child would have assessed for core instructional support in 2010 or 2011, that same child would receive a mark for intensive instructional support in 2012. While the first grade benchmark goals for phoneme segmentation became optional and no longer endorsed in 2012, as displayed in Table 9, no numbers are given as reference if a teacher or school did choose to assess.

**DIBELS benchmark questions and answers.** Not finding optional benchmarks in the published and on-line data, the researcher sent two queries to the University of Oregon hoping to retrieve that information.

Since you changed benchmarks in 2012, I see that kindergarten PSF for DIBELS next is optional and endorsed although I cannot find the ranges for core, strategic or intensive. I would appreciate recommended scores for OE section below, if you have them available. Further, since the ability to segment words into individual phonemes is linked with reading in so many studies, why do you not have a new set of benchmarks for 2012 for first grade? It is usually
a skill of phonological awareness, achieved later than FSF, so I would think teachers would want this test MOY and EOY for K, and BOY and MOY for first, so at least they can compare their student’s data. Just a thought. (J. Fagan, personal correspondence, September 28, 2013)

DIBELS head researcher Kelli D. Cummings, responded,

Now, for the first part of your question, what are our PSF goals for K, I will point out that we have only one pair of goals/cut points for PSF and they are listed for the middle of K. These are: 51 and above (goal) 41 and below (cut point for risk). I can see where the confusion comes in: PSF is optional and endorsed in spring of K so why doesn’t it have different benchmark goals just like Daze does? We actually should probably change the wording for PSF in spring to optional, not endorsed; because our results indicate that we shouldn’t use this measure for screening even with students at risk after the middle of K. Our results indicate that PSF scores are no more reliable than teacher judgments once students meet the winter benchmark. With our criterion for predictive validity specified as .75 or better and spring PSF values of .68 for both some and at-risk students, we can’t in good confidence prescribe different goals for students at that time point.”

On to your second question, regarding why we don’t recommend the use of PSF past kindergarten, I have both an empirical answer and then a bit of conjecture for you. The empirical answer is that PSF is highly unreliable after middle of K (the DIBELS Next technical manual reports alternate-form
reliability of PSF at .44). Consequently, the predictive validity of PSF is also remarkably low especially as students move up in grade level. Other studies also report low reliability for PSF, much lower than the reliability coefficients reported in the early days of DIBELS 6th edition, and in Kaminski & Good, 1996. Now, why would a measure be highly reliable and then have very low reliability? This is where my conjecture comes in. My hypothesis (one of many) is that twenty years ago, phonemic awareness instruction was all but absent from preK-2 reading curricula. Thus, when PSF was first introduced as a measure, there was a nice distribution of student performance on that measure, and it had higher reliability. Now, PA instruction is VERY common (as it should be), but it has resulted in an interesting ceiling effect for PSF that happens pretty rapidly. When you have, a ceiling effect on a measure, most kids score at the top of the mark, and the measure doesn’t provide much useful information to discriminate between the (potentially) good or (potentially) poor readers any longer.

So, two points to wrap-up: (1) in the current DIBELS system, PSF works as well as FSF through the middle of K and then NWF picks up all of the useful information about PA and the alphabetic principle in our measurement models. (2) PSF’s lack of predictive validity means that the measure doesn’t work so well anymore, but it does not mean that PA instruction is no longer important it is! We may need, though, to have a longer, or a more complicated measure of PA skill so that we can truly see the kids
who are struggling because, right now, PSF suffers from unreliability due, at least in part, to ceiling effects. (K. Cummings, personal correspondence, October 3, 2013)

**Qualitative**

The qualitative portion of this study included examination of the school’s curriculum guide for kindergarten and first grade, the adopted language arts curriculum, and teaching manuals for lessons that teach phonological awareness. Teachers were also interviewed and asked questions about the instructional practices they used with the adopted curriculum, and any additional resources and instructional practices they brought into the classroom to teach phonological awareness.

**Curriculum guide.** Shortly after the school’s charter was established, the executive director asked one of the more experienced Montessori teachers to put a team together to write the *Monthly Curriculum Overviews* for K, ages 6-9, ages 9-12, and Middle School. Six experienced female Montessorians wrote the original curriculum guide in June of 2004. According to one of its original writers, “At that time, being a still new charter, it was not as much about getting input from all campuses on best practices from our collective experience, but to have experienced Montessorians create a guide that was so desperately needed by our many new Montessorians (Original writer, personal communication, July 19, 2013).

The guide was revised on December 16, 2008, and again in 2009/2010. The formatting of the document and monthly layout was different, but no actual content or changes in lessons were evident for phonological awareness or language arts for the
year. At the time this study began, the 2009/2010 version served as the current curriculum guide.

**Curriculum.** The school used a blended curriculum for instruction in language arts from a variety of sources. Table 10 below lists the school-wide adopted English language arts curriculum used at the time of the study. This list was obtained through school documents used during the school’s Western Association of Schools and Colleges (WASC) accreditation. To preserve the school’s anonymity, the documents that were used to ascertain the school’s curriculum are not cited.

Table 10

<table>
<thead>
<tr>
<th>School-Wide Adopted English Language Arts Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbooks and Instructional Materials</td>
</tr>
<tr>
<td>English</td>
</tr>
<tr>
<td>Language Arts</td>
</tr>
<tr>
<td>K-1</td>
</tr>
<tr>
<td>Montessori Word Building Program, Montessori Albaseni Language Arts Curriculum, Primary Phonics, Modern Curriculum Press, Accelerated Reader</td>
</tr>
</tbody>
</table>

**Teaching manuals.** Each teacher has undergone a yearlong Montessori training at the level in which she teaches. For the kindergarten and first grade teachers, the 3-6 year-old plane of development targets the majority of lessons she will teach. When teachers undergo their Montessori education, the training center they attend provides, at a cost, the teaching manuals for each individual subject. The training manuals are deconstructed page-by-page, put into page protectors with annotations and pictures added to create a personal binder, and used as reference throughout the
year while teaching Montessori lessons. Since there are varieties of Montessori teacher programs, Montessori affiliations, and different accreditations, the manuals from year to year or teacher to teacher vary. The researcher chose to analyze *Language Arts Manual: Early Childhood, Volumes 1-3* (Rigg, 2004, 2006), by Montessori Research and Development, as it is the most current teaching manual used by the K/1 staff and the local Montessori training center. The researcher also thought the most current teaching manual might best reflect any changes due to current research in phonological awareness.

**Teacher interviews.** Four of the five teachers consented to participate in interviews. They did not receive any compensation for participation in this study. Interviews were conducted between December 5, 2012 and January 1, 2013, and took between 20-45 minutes. The researcher took brief notes during the interviews and audio taped the discussions until they could be transcribed.

Teachers were asked four questions about their use and delivery of the adopted kindergarten and/or first grade reading curriculum, and any changes or additions they had made. The interview questions for kindergarten and first grade teachers were:

1. What lessons in the Montessori and adopted curriculum teach phonological awareness? When do you teach them and how?
2. What additions or modifications to the curriculum have you incorporated to teach phonological awareness?
3. What specific lessons address first sound fluency and phoneme segmentation?
4. How and how often are students reviewing phonological awareness activities?
Follow-up dialogues took place later in the year, for details, clarification, and information regarding specific Montessori lessons and instructional practices as additional information was needed during the writing of this project.

**Procedures**

**Background**

In August of 2011, teachers attended a half-hour long training by the campus educational specialist to orient them to the newly adopted reading assessment DIBELS. January 2012, the researcher began to investigate the school site’s qualitative data in DIBELS, and other assessments for language and literacy practices for one of her Master’s courses. From February through March, the researcher analyzed the data of DIBELS results, and found the area of concern for kindergarten and first grade was phonological awareness, specifically FSF and PSF, and shared that information with administration.

During May and early June of 2012, the researcher presented her completed school study to the network’s executive director, the principal, and educational specialist of the school site. Written permission from the principal for approval of a more detailed study at the school site was obtained. In June, the California State University approved the researcher’s project proposal. Research was launched for administration and scoring for DIBELS. The DIBELS cumulative data was viewed online from the DIBELS website. Hard copies of the individual DIBELS test booklets were examined for accuracy and appropriateness of testing procedures. An initial viewing of the student’s score sheets for DIBELS detected variations in teachers’
procedures for recording students’ responses and inaccuracies in scoring. The researcher shared these findings with administration and then started rescoring student data.

In July 2012, the researcher was asked by her school site’s educational specialist to present “DIBELS Reading Assessment Administration and Scoring” workshops for the network professional development in-service to ensure proper administration and scoring of DIBELS sub-tests. Researcher prepared one workshop for kindergarten teachers, and a second for first through third grade teachers.

August 2012-September 2012 the researcher presented two network and two school site workshops. The presentations had time constraints of one-and-a-half hours per workshop. The researcher felt this time was too short for adequate training. Two network workshops were offered to kindergarten through sixth grade. Attendance at the network workshops was elective, as other workshops were offered. However, at the researcher’s school site this workshop was mandatory for all the kindergarten through third grade teachers. Two weeks later, a similar mandatory workshop was presented to the fourth through sixth grade staff for their specific tests.

In December 2012, analysis of the curriculum guide and teaching manuals began. Written consent from teachers for participation in school study was obtained and three interviews were conducted. The school’s kindergarten and first grade language arts curriculum guide was also examined. By the middle of January 2013, all teacher interviews were completed for the four questions. Follow-up dialogues also took place as needed during the writing of this project.
Summary

Chapter 3 presented information regarding the methodology used in this study. The design of the study was followed by demographic information of the studies participants. A description of the measures and materials described the quantitative and qualitative data of the study. The chapter concluded with the procedures of the study.
Chapter 4

RESULTS

Research in phonological awareness and California Common Core Standards (California Department of Education, 2011) provide the basis for an evaluation of K-1 students’ phonological awareness skills and instruction at the researcher’s school site. This chapter first presents the results of student achievement for First Sound Fluency and Phoneme Segmentation Fluency measures for the study’s kindergarten and first grade Montessori students using DIBELS Next (Good & Kaminski, 2011) phonological awareness assessments. Next, is an examination of the curriculum and curriculum guide for the school. Followed by teacher’s interviews as to how they are delivering instruction in phonological awareness and any adaptations they have to the curriculum. The chapter concludes with a summary of phonological awareness units, Common Core tasks, and the curriculum and instructional practices of the kindergarten and first grade teachers.

DIBELS

DIBELS Next has two phonological awareness assessments that evaluate a student’s phonological awareness knowledge the phoneme level. First Sound Fluency (FSF) measures a student’s ability to isolate the first phoneme, or sound, in a word presented orally by a teacher or administrator of the assessment. Phoneme Segmentation Fluency (PSF) is a more advanced skill. Students orally deconstruct a three or four phoneme word into its constituent phonemes, after the word is presented aurally.
Initial Teacher Reports

When the researcher began her study, the first grade students had been assessed for PSF, according to the recommended assessment schedule beginning the 2011-2012 school year. Contents of the initial DIBELS report, generated at the beginning of the year and scored by the teachers, indicated 92% of the first grade students in Classroom 1 needed strategic or intensive support for phoneme segmentation fluency, while 66% of first grade students in Classroom 2 needed strategic or intensive support. This showed a critical need for a majority of students, even at these lower benchmarks of 40+ for core, 25-39 for strategic, and 0-24 for intensive (Good & Kaminski, 2011). When the researcher saw that the DIBELS instructions for marking and scoring student’s answers were not followed, she went back through each student’s assessment and rescored adhering to the prescribed directions. Data was then transferred into Excel spreadsheets for descriptive statistics.

Kindergarten First Sound Fluency (FSF)

First Sound Fluency means and standard deviations for the three kindergarten classrooms for beginning and middle of the year first sound fluency scores are presented in Table 11.
Table 11

Means and Standard Deviations for Kindergarten First Sound Fluency

<table>
<thead>
<tr>
<th>Measure</th>
<th>Beginning of the year Classroom</th>
<th>Middle of the year Classroom</th>
<th>All classes</th>
<th>All classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>31.29</td>
<td>24.62</td>
<td>21.61</td>
<td>25.48</td>
</tr>
</tbody>
</table>

According to DIBELS’s norms, at the beginning of the year, core students have scores 23 and above, while strategic students are between 13 and 22, and intensive students are at or below 12. The norms are higher for the middle of the year (reflecting growth that normally occurs once formal schooling has begun): 52 and above for core, 43 to 51 for strategic, and at and below 42 for intensive. Using these scoring criteria, across all classrooms, at the beginning of the year, 68% were core, 13% were strategic, and 19% were intensive, while by the middle of the year they were 9%, 17%, and 73% respectively (see Table 12).
Table 12

*Kindergarten Students at Core, Strategic, and Intensive Levels in First Sound Fluency Instruction at the Beginning and Middle of the Year*

<table>
<thead>
<tr>
<th>Instructional Need (BOY scale/MOY scale)</th>
<th>Classroom 1</th>
<th>Classroom 2</th>
<th>Classroom 3</th>
<th>All Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core (23-60/52-60)</td>
<td>71%</td>
<td>7%</td>
<td>77%</td>
<td>68%</td>
</tr>
<tr>
<td>Strategic (13-22/43-51)</td>
<td>29%</td>
<td>21%</td>
<td>0%</td>
<td>13%</td>
</tr>
<tr>
<td>Intensive (0-12/0-42)</td>
<td>0%</td>
<td>71%</td>
<td>23%</td>
<td>19%</td>
</tr>
</tbody>
</table>

*Note.* BOY = Beginning of the year; MOY = Middle of the year.

Note that the proportion of students at strategic and intensive levels actually increased from beginning to the middle of the year. This suggests that classroom instruction that normally would result in students knowing more about isolating initial phonemes may not have been present in the classrooms being assessed.

Also notable were differences among the three classrooms both in where students were at the beginning of the year and where they were in the middle of the year. While all three classrooms began the school year with the majority of their students’ scores in the core range for First Sound Fluency, Classroom 3 had fewer than the other two classrooms. Classroom 1 had 71%, Classroom 2 had 77%, and Classroom 3 had 55%, with an average of 68%. However, by the middle of the year a minority of the students achieved core. Here again there were differences across classrooms with Classroom 2 having twice as many core students as Classroom 1 and three times as many as Classroom 3. Classroom 1 had 7%, Classroom 2 had 15%, and
Classroom 3 had 5%. The average of the three kindergarten classes was 9%. Overall, Classroom 1 decreased by 64% for students achieving core, while Classroom 2 decreased by 62%, and Classroom 3 decreased the least by 50%. Hence, their scores decreased dramatically, thus showing that an average of 91% of students needed intensive or strategic support in all three classrooms. The data indicates students did not receive sufficient practice in the skill of naming the initial phoneme of a word, or receive adequate subsequent instruction, to maintain or increase their scores in First Sound Fluency.

**Kindergarten Phoneme Segmentation Fluency**

Phoneme Segmentation Fluency (PSF) means and standard deviations for the three kindergarten classrooms for the middle and end of the year phoneme segmentation fluency scores are presented in Table 13.

Table 13

*Means and Standard Deviations for Kindergarten Phoneme Segmentation Fluency*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Middle of the year Classroom</th>
<th></th>
<th></th>
<th></th>
<th>End of the year Classroom</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>All classes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>All classes</td>
</tr>
<tr>
<td>Mean</td>
<td>36.00</td>
<td>31.85</td>
<td>32.42</td>
<td>32.61</td>
<td>41.79</td>
<td>45.31</td>
<td>42.75</td>
<td>43.17</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>18.06</td>
<td>19.74</td>
<td>18.49</td>
<td>17.48</td>
<td>13.46</td>
<td>16.28</td>
<td>21.09</td>
<td>17.49</td>
</tr>
</tbody>
</table>

According to DIBELS’s norms, at the middle of the year, core students have scores 51 and above, while strategic students are between 42 and 50, and intensive students are at or below 41. Using these scoring criteria, across all classrooms, at the
middle of the year, 20% were core, 10% were strategic, and 70% were intensive (see Table 14).

Table 14

Kindergarten Students at Core, Strategic, and Intensive Levels in Phoneme Segmentation Fluency Instruction at the Middle of the Year

<table>
<thead>
<tr>
<th>Instructional Need (MOY scale)</th>
<th>Classroom 1</th>
<th>Classroom 2</th>
<th>Classroom 3</th>
<th>All Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core (51-79)</td>
<td>14%</td>
<td>15%</td>
<td>32%</td>
<td>20%</td>
</tr>
<tr>
<td>Strategic (42-50)</td>
<td>7%</td>
<td>23%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Intensive (0-41)</td>
<td>79%</td>
<td>62%</td>
<td>68%</td>
<td>70%</td>
</tr>
</tbody>
</table>

As explained in Chapter 3, scoring criteria for end of the year Phoneme Segmentation Fluency scores are not available from DIBELS. Without scoring criteria, we cannot measure the progress of the students at the end of year or compare the scores between middle of the year with the end of the year scores. Kelli D. Cummings indicated that PSF scores are no more reliable than teacher judgments once students meet the winter benchmark (K. Cummings, personal correspondence, October 3, 2013). You may recall that Cummings stated that phonological awareness instruction, including phoneme segmentation instruction is very common, as she believes it should be, and has observed a ceiling effect with most children scoring at the top of the mark and believed the measure did not provide much useful information to discriminate between potentially good or poor readers.

Note that the scores display 14% of students in Classroom 1 achieved core for Phoneme Segmentation Fluency, 15% of students in Classroom 2, and 32% in
Classroom 3. Again, it is noteworthy that Classroom 3 had twice as many students at core than the other two classrooms. Overall, all three classes had 20% of kindergarten students able to segment a three or four phoneme word in the core range. The data indicates that by the middle of the year the majority of students did not receive sufficient instruction or practice in the skill of segmenting phonemes in a word spoken aurally to them.

**First Grade Phoneme Segmentation Fluency**

Phoneme Segmentation Fluency (PSF) means and standard deviations for the two first grade classrooms for the beginning of the year phoneme segmentation fluency scores are presented in Table 15. Note that kindergarten students from Classroom 3 were distributed equally between Classrooms 1 and 2 for first grade. The goal was to maintain a balance of boys and girls and academic abilities. The maximum score for Phoneme Segmentation Fluency is 60. Note that the mean in Classroom 2 (32.11) is twice as large as Classroom 1 (15.68).

Table 15

*Means and Standard Deviations for First Grade Phoneme Segmentation Fluency at the Beginning of the Year*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Classroom 1</th>
<th>Classroom 2</th>
<th>Both classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means (and standard deviations)</td>
<td>15.38 (11.66)</td>
<td>32.21 (10.11)</td>
<td>23.79 (13.74)</td>
</tr>
</tbody>
</table>
There are no norms set for Phoneme Segmentation Fluency by DIBELS for first grade. However, in order to assess the first graders scores, the researcher decided to use the same criteria set for scores used for middle of the year kindergarten for PSF. According to DIBELS’s norms, at the middle of the year for kindergarten, core students have scores 51 and above, while strategic students are between 42 and 50, and intensive students are at or below 41. Using these scoring criteria, across both classrooms, at the beginning of the year, 0% were core, 10% were strategic, and 89.5% were intensive (see Table 16).

Table 16

<table>
<thead>
<tr>
<th>Instructional Need (MOY scale)</th>
<th>Classroom 1</th>
<th>Classroom 2</th>
<th>Both Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core (51-79)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Strategic (42-50)</td>
<td>0%</td>
<td>21%</td>
<td>10%</td>
</tr>
<tr>
<td>Intensive (0-41)</td>
<td>100%</td>
<td>79%</td>
<td>89.5%</td>
</tr>
</tbody>
</table>

*Note. MOY= Middle of the Year.*

Note that 100% of the first grade students in Classroom 1 were at intensive for Phoneme Segmentation Fluency, and 79% in Classroom 2, using norms set for kindergarten. Also notable was that the proportion of students at intensive levels increased from kindergarten to first grade using the same measure, and the proportion of students at core decreased in first grade. Kindergarten had 20% at core, while first grade had 0%. Kindergarten and first grade students both had 10% at strategic for
phoneme segmentation. Lastly, kindergarten had 70% at intensive, while 89.5% of first graders were in the intensive range.

**Summary of DIBELS**

According to DIBEL’s norms, kindergarten students assessed significantly higher at the beginning of the year in measures of First Sound Fluency when compared to middle of the year measures of core, strategic, and intensive criteria. According to norms for Phoneme Segmentation Fluency, the majority of kindergarten students assessed in the range of requiring intensive instructional need at the middle of the year. Using the same criteria set for kindergarten it was found that a larger percentage of first grade students assessed needing intensive instruction for segmenting phonemes orally.

**Curriculum**

This section is organized by analyzing the curriculum guide and the school’s curriculum for phonological awareness tasks. The main curriculum includes an in-depth look at the most current Montessori training manual used during the 2011-2012 school year.

**Curriculum Guide**

Upon examination of the school’s 2009/2010 kindergarten and first curriculum guide, only one month directly used the term phonemic awareness for the school year and only for kindergarten.

**Kindergarten.** The month of September, for kindergarten has the heading “Phonemic Awareness” in bold. Underneath the heading, the following concepts are
listed in a long column, as the entire year of language arts is on one page: tracking; opposites; rhyming; graphic matching with bullets of two-part cards and three-part cards underneath; sequencing; puzzles; sandpaper letters; sound recognition with bullets for consonants and vowels; letter series: smpra-fcblnei-hjgdwou-kvxyzq. A few spaces underneath the list it states: “High frequency words – Dolch” and it states ongoing.

While rhyming is a phonological awareness activity, it is not a phonemic awareness activity. The other concepts listed for September are not phonemic awareness activities either. They are visual discrimination exercises, whole language exercises, and sound-symbol correspondence (phonics), and sight words. Although rhyming is listed as a concept to be taught it is assumed the teacher knows which lesson or lessons to use in her manual and/or which part of the curriculum she would use.

The month of October has the heading of “Sound Recognition” for kindergarten. Listed underneath is initial sound, ending sound, middle sound, then, indented with a bullet for short vowels and moveable alphabet. Initial sound, end sound, and middle sound are indeed sound recognition concepts in non-technical language, but more precisely, these are phonemic awareness tasks of phonemic segmentation including identifying beginning sounds.

November has the heading “Word Recognition” which uses phonemic segmentation tasks using the moveable alphabet to teach spelling of CVC words. The Montessori Word Building program continues through first grade.
First grade. The first grade curriculum guide while rich in phonics and word development has no phonological awareness or phonemic awareness concepts listed. Still, the Montessori Word Building program teaches spelling through the task of segmenting phonemes to build words, which are later read to a teacher.

However, the bottom of the first grade curriculum guide lists one support material, which does teach phonological awareness. *Explode the Code* (Hall & Price, 1997) is a workbook that teaches phonological awareness and phonics, but is not a part of the regular, adopted curriculum. The kinds of tasks with print are segmenting, blending, substituting, and deleting words and word parts. Teacher’s guides “provide a number of oral activities to help students recognize and manipulate individual in spoken words (Davis, 2010, p. 5). It is used for intervention as needed, but the school does not use the Teacher’s guides, so the aural instruction is not part of the intervention practices. Instead, as part of the regular curriculum the school has chosen to use Primary Phonics workbooks to support its reading program, however they have no phonological awareness activities even at the workbook’s lowest level.

**Montessori Training Manuals**

For background purposes, it is important to understand a bit of Montessori philosophy when examining lessons in the training manual. Maria Montessori held that there are direct and indirect aims to lessons (Fleege, 2006). Indirect preparation for reading include practical life exercises to develop independence and concentration, and development of the eye through pouring activities, using tweezers, eyedroppers, etc. Development of the sense of left to right movements is believed to be learned with
scooping and scrubbing activities and through work using cylinders and geometric cabinet. Sensorial materials provide indirect preparation through visual preparation by using the cylinders, pink tower, and brown prisms. Volume 1 (Rigg, 2006) describes over 20 visual discrimination activities that are considered to be an indirect aim in preparation for reading and writing. Montessori believed direct preparation for reading is achieved from picture matching exercise, shape matching exercises, vocabulary cards, sandpaper letters, movable alphabet, phonetic word boxes, phonetic sentence and story booklets, definition cards, command cards, and books. While doing research for this project, this researcher found a lack of research supporting some of these activities for their relevance to phonological awareness and beginning reading.

The three-period lesson is used extensively in Montessori, when presenting a new material (Rigg, 2004). The word lesson is used in Montessori vernacular to describe the direct instruction given to a student by a teacher or instructional aide. It is a common instructional practice to give the lesson again if a student has forgotten how to use a material or observed to not have mastered the lesson’s aim. The concrete, sensory experience of the material is believed primary as compared to the language or vocabulary. The first period is the association of the sense perception with the name of the material. When teaching sounds the teacher would say, “This is /s/. This is /t/.” As she introduces each sandpaper letter’s sound to the child, she models how to trace the letter with her index and middle fingers. She should speak slowly and clearly, emphasizing the sound of the letter. Two or three objects are presented at the same time for contrast, for example, the sandpaper letters “s” and “t” are introduced
together. The second period is recognition of the name to the object. The last item named is the first item the teacher asks in order to ensure greater recall. “Point to the /t/,” or “Place the /t/ here,” are two variations of the second period. When the directress feels the child responds appropriately, she moves to the final period. The third period is verbalizing the name corresponding to the object. “What is this?” Again, the last item named in the second period named first for chance of greater recall. The child would verbalize /s/, then /t/. As an instructional practice, there is a systematic daily review with the instructional aide of mastered sounds before introducing a new set of sounds.

The curriculum is delivered by teachers through the series of lessons taught from her Montessori training manual. Because there are varieties of Montessori teacher programs and Montessori affiliations, the manuals vary from teacher to teacher. Differences in training and training manuals have the potential for variations of instruction among the three classrooms. *Language Arts Manual: Early Childhood, Volumes 1-3*, (Rigg, 2004, 2006) by Montessori Research and Development, is the manual that Teachers 2 and 3 use. Therefore, it may be the partial basis for instruction in Classrooms 1 and 2.

The researcher also interviewed the teachers to establish if they taught these specific lessons in their classrooms, and if so, how often. Examining the manuals for phonological awareness activities and concepts, the researcher found two lessons for rhyming, two lessons for isolation of phonemes, one lesson for isolation of phonemes and onset-rime, and one lesson for segmentation, which forms the basis of the
Montessori word-building program. Some of the lessons might be taught once, such as rhyming, and practiced until mastery is achieved by students. However, the lesson for segmentation would then become a routine practice the students use repeatedly, and re-teaching of the lesson as needed for each student.

**Rhyming.** One lesson recommended in Volume 1 for aural training is called “Rhymy-Blimy” (Rigg, 2006). The teacher begins by saying the child’s name and a corresponding rhyme, such as Timmy-Swimmy or Kathy-Bathy. An extension of this lesson is to name objects in the environment, using real or nonsense words, as in hat-cat or table-bable.

It should be noted that this lesson includes both one and two syllable words. Rhyming two syllable words is less commonly practiced than one-syllable words and might be an issue for children to master because the task of rhyming two-syllable words is more difficult. However, this first lesson in the manual had not been taught in any of the three classrooms during the time of the study or afterward with kindergarten or first grade students. Teacher 5 felt by using the children’s names some may perceive it as teasing and she might consider naming objects in the environment.

The second lesson in rhyming is called “Rhyming Objects” (Rigg, 2006). Interestingly, the lesson presentation never directly uses the word rhyme. The teacher begins by placing and naming four objects on the lesson rug: fan, man, sock, and lock. Next, the teacher asks, “What sounds like sock? She moves the sock by the fan and says, “Fan and sock? No. Fan and sock do not sound alike” (Rigg, 2004, pp. 174-175). She continues in this manner until a match is made. She explains about the special
relationship these objects have with each other. A variation includes using picture cards instead of objects. According to the manual, the direct aims are (a) Classification, (b) Grouping by function, and (c) Order, concentration, coordination, and independence; and the indirect aim is preparation for reading.

The only classroom that included this lesson for rhyming instruction was Classroom 3. Teacher 5 chose to teach the variation using picture cards instead of objects. She taught the lesson whole group once during circle time and checked for student’s understanding by their making of a rhyming match. She then moved the rhyming job to a shelf so the children could collaborate with a partner and practice as they chose. This was a popular job among the children and remained on the shelf for approximately two months.

**Phoneme isolation.** To develop awareness of sounds in words, Volume 1 refers to this lesson, “I Spy…” which is played by placing and naming three familiar objects that begin with different initial sounds on the lesson rug (Rigg, 2004). The teacher then says, “I spy with my little eye something that starts with the sound ____.” The goal is for the child to name the object by its initial phoneme.

The teachers do not teach this specific lesson described in the manual. Nonetheless, they have all done a variation of the lesson while at circle by choosing something visible within the classroom. Teacher 3 stated she often suggests this initial phoneme activity for parents to do with children in Classroom 2, when she believes students are struggling with this concept. No teacher gives this lesson regularly. This
would infer students might not have practice with each phoneme. However, all
teachers expressed a desire for practicing this lesson more at circle with the students.

The second activity for aural training is “Tricky Vowel Game” (p. 81). An
object is held for the students to view, while the teacher names it using a different
vowel. The children are to identify the sound that has been mispronounced and
correctly name the object. For example, the teacher would hold up a little bed and say,
“bid.” The children are to respond, “/i/ bed.” The goal of this lesson is phoneme
isolation of the medial phoneme, case being, the mispronounced vowel /i/ is named
and then the corrected medial phoneme is added to form the word bed.

No teachers have ever taught this lesson in any of the classrooms. As described
in the manual, the students do not say the correct vowel in isolation, which seems
counterproductive. However, when asking about this specific lesson, Teacher 3 shared
that when she checks the student’s work in Montessori Word Building, she points out
to a student when their medial vowel is not correct. She emphasizes the correct medial
sound to the student and changes the moveable alphabet letter before they record their
work. This is a common instructional practice among all the teachers, and would
include any letter/sound that is incorrect.

Phoneme isolation and onset-rime. I spy. Chapter 4 “Direct Preparation for
Reading” in Volume 2 gives extensive lesson details for “I spy…Initial Sounds with
Objects” (Rigg, 2004). The suggested sequence for sounds includes:
Set 1: s, m, t, a                     Set 5: w, k, g, u
Set 2: f, n, d, e                     Set 6: j, v, q, u
Set 3: c, r, p, i                     Set 7: x, y, z.
Set 4: h, l, b, o

Objects are assembled by initial sounds in the first presentation. A child is invited to work with the initial sounds objects in set 1: /s/ and /m/. Two sounds out of the four are introduced first. Each item is removed from the box and named, then placed on the work rug in a left to right horizontal row. The three period lesson is given to establish vocabulary of the items. The directress selects an item and names the object as the first period, “The first sound you hear when you say ‘map’ is /m/.” The next item is named, followed by naming the initial sound, until all the items are completed. The second period of the lesson asks the child to do an action, such as, “Hand me an object that begins with /s/.” The final period asks, “What sound does this object begin with?” The child continues this activity until all initial sounds are named. One continues in this manner with the rest of the initial sounds in set #1: /s/ and /t/, /m/ and /l/, and /s/, /m/, and /l/. The sound /a/ introduced and the blending of sounds emphasized for onset and rime, m_at, s_at, S_am, t_am. Blending is taught with pauses emphasizing the onset from the rime. The goal of this lesson is phoneme isolation, onset-rime, as well as blending. Teachers do not present this lesson as it appears in the manual, as an aural task. However, although print is involved the activity does involve phonological skills of blending onsets and rimes and segmentaing initials sounds.

Sandpaper letters are the first material used to teach the sound-symbol relationship, or beginning phonics instruction. “Initial Sounds of Pictures Introduction” precede “Sandpaper Letters: Initial Sounds with Pictures.” “Final Sounds of Objects” followed by “Final Sounds of Pictures Introduction,” and lastly for this series of lessons “Sandpaper Letters: Final Sounds with Pictures.” All of these lessons follow the same format as the details relayed in the previous lesson. It is characteristic in Montessori to begin with more concrete items, such as small objects before moving to a more abstract idea as a picture. Teachers do not follow the sequence of lessons explained in the manual.

**Initial sound boxes.** Teachers do use the initial sound boxes with objects using moveable alphabet pieces for the initial sound only. A teacher or teacher’s assistant first demonstrates how to use the material. Then a child works through the series of initial sound boxes independently. Thus, students are thinking of the sounds themselves, and not hearing the sounds produced orally. The teacher checks the student’s work, before the job is recorded in their Word Building book. Again, she would point out any error before recording, and then the child would hear the sound. Carnine, Silbert, Kame'enui, and Tarver (2004) state that telescoping (saying a series of blended sounds to form a word, e.g., “aaammm” becomes am), also known as blending, and rhyming are skills that are:
…primarily spoken language skills, which means that the teacher does not present written letters or words to students. Instead, the exercises are conducted orally with the teacher saying sounds and requiring students either to repeat the sounds or say the sounds another way. The student is not required to look at a word and read it. The student merely listens to the sounds and responds. Teaching these phonemic awareness skills early is necessary to lay the groundwork for later reading skills, such as sounding out words and blending. (p. 52)

As teachers have modified the lesson, this task does not give the students opportunity to listen to a word spoken aurally, and then give the answer orally. A skill which researchers, Carnine et al. (2004) deem necessary for later reading skills. This lack of aural training may be a contributing factor for the student’s decrease in mid-year scores with DIBELS First Sound Fluency. Further, no classrooms use this type of lesson, or a modification to isolate the final sound or phoneme.

**Segmentation.** The last lessons found in the Montessori training manuals, which teach phonological awareness, or specifically phoneme segmentation provides the basis for Montessori Word Building. Montessori Word Building is a teacher created program used in Montessori classrooms to apply sound symbol knowledge by first spelling words and then reading them. It is noteworthy to mention this is an activity done routinely. Pacing is set by the individual student’s mastery. The routine is used with in kindergarten and first grade to teach the children to spell and read phonetically.
The NRP and other researchers (Carnine et al., 2004; Ehri et al., 2001; NICHD, 2000) endorse the use of letters of the alphabet as students are taught to manipulate phonemes. Carnine et al. (2004) declares this overlap helps students to understand how their phonemic awareness connects with their knowledge of the alphabet. Whether the instruction is called phonemic awareness or phonics is less important (Carnine et al., 2004).

*Language Arts Manual: Early Childhood* (Vol. 2, Rigg, 2004) and the school’s 2009/2010 curriculum guide share the same sounds sequence. The first lesson a student is invited to work with is object box a and the moveable alphabet. The object box is placed in the upper left hand corner of the work rug and the moveable alphabet to the right of the container of objects. One object, for instance, a tiny plastic bag is removed from the container and placed under the object box, and is named by the teacher. The word is repeated and the first sound of the word, /b/, is made by the teacher while she systematically points to each letter in the moveable alphabet to locate the letter the sound represents. The “b” placed to the right of the object. The medial sound /a/ is made by the teacher, located, and “a” placed to the right of the “b.” The final sound /g/ is lastly made by the teacher while systematically pointing to the each letter of the box until the /g/ found. The object is pointed to while each sound is emphasized in the word and named again. Embedded in this activity is phoneme segmentation, which is used to select the letters that represent each of the sounds in the word. The child is invited to continue working with the second object in the container building subsequent words under the first, with support provided as
necessary. Six CVC words are built with the moveable alphabet. Next, the student reads the words. All the objects are removed and placed in a random order in a horizontal line above the words that were built. The teacher will pick up an object, name it and place it next to the word it represents. Note this involves modeling by the teacher blending sounds and is a reading task. The student is invited to continue naming the objects and matching them to the corresponding words. The last step involves having the child record their words in a Word Building notebook. When the recording is complete, the final step is to read the word to the teacher one last time prior to returning each letter to the moveable alphabet box.

Cleaning up each material and placing it back on the proper shelf is part of the child’s care of the environment, an integral part of Montessori philosophy. The next day, a student would work with the object box for /e/ in the medial sound. After all five vowels have been worked with, the sixth day is for a mixed review, which contains five objects one of each medial vowel sound.

Montessori Word Building provides students with ample practice with spelling, breaking down a word into its phonemic segments, and reading phonetic words. After the teacher has modeled how the program works, a child then works independently through the Word Building program. Direct instruction, or re-teaching of sounds, will happen when a student makes an error in spelling, and then the teacher will emphasize the sound aurally individually. Since the skill of phoneme segmentation is not taught without the use of a moveable alphabet, students are not being taught the task of simply listening to a word and breaking it apart for its sounds.
This may be a factor of why most students are not achieving scores within core criteria for DIBELS Phoneme Segmentation Fluency for kindergarten or first grade. If students had been at a preschool that emphasized phonological training, this may further explain that as more time went by and students did not maintain practice of this aural skill, we saw a rise in those needing intensive support from 70% in kindergarten to 89.5% for first grade, using the same criteria set for kindergarten.

**Summary of Curriculum**

Upon examining the curriculum guide and interviewing the teachers, it appears they are somewhat following the curriculum guide as a guideline. Their practices pertain to each child as they differentiate instruction rather than whole group month by month. The monthly headings especially do not apply to the instructional practices or curriculum happening at the school for kindergarten. Investigating the curriculum and teaching manuals, and interviewing teachers about the lessons they give, teachers are not following the progression of lessons as they appear in the manual and are not doing most of the lessons that pertain to phonological awareness. Teachers do not give the two lessons given for rhyming, but Teacher 5 does use a variation on the second lesson. For phoneme isolation, teachers have all given instruction for “I spy…” but do this activity irregularly. Teachers do not teach the “Tricky Vowel” lesson, but find teachable moments when working with students as errors with medial vowels appear using the Word Building program. Students are working with the Object Boxes with moveable alphabet pieces for initial and medial sounds, but not ending sounds, and never on a strictly aural and oral basis. Phoneme segmentation occurs on a daily basis.
as the children progress through the Montessori Word building program. Teachers clearly understand the importance of phoneme segmentation and blending and how these tasks are related to reading and spelling. However, as Carnine et al. (2004) suggests the skill of listening to the sound and producing it orally benefits a child later in reading, which is missing at the school.

**Teacher Interviews**

With the exception of Teacher 1, four other teachers wholeheartedly consented to interviews. Teacher 3 and 4, from classroom 2, preferred to interview together, while the others were separate. Four questions were asked to the teachers. The section that follows is the questions and answers set in table form with the researcher’s evaluation and summary.

**First Question**

The first question was asked in two parts (see Table 17). When posed with those questions, all interviewees asked what was meant by “phonological awareness.” The researcher gave a description of phonological awareness to each teacher, including the difference between phonological and phonemic awareness. Phonological awareness is an awareness of sounds in words. Research has shown that children who have strong phonological awareness read better. It includes the aspect of units that begin with word awareness, syllables, onset-rime, and phoneme. It also involves tasks from simple, such as rhyming or alliteration, to the more complex at the phoneme level—known as phonemic awareness. Phonemic awareness might include blending sounds to make words, segmenting words into individual phonemes, or manipulations
of phonemes such as adding, deleting, substituting, or switching sounds. The teachers understood the concepts when described, but had been unfamiliar with the term phonological awareness.

Table 17

First Question and Answers

| Question 1 | A. What lessons in the Montessori and adopted curriculum teach phonological awareness?  
B. When do you teach them and how? |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom 1</td>
<td>Teacher 2 gave rich details about sandpaper letters, word building to teach segmentation, and onset-rime flip charts used to teach blending.</td>
</tr>
<tr>
<td>Classroom 2</td>
<td>Teacher 4 expressed, “We do not have really anything in the kindergarten curriculum that addresses that. We really depend on the word building, reading program with teacher’s assistant, and workbooks We do workbooks of initial and last sounds and we do word families, and flip books for onsets and rimes. You actually taught me (speaking of the researcher) to hold the sound to teach blending, like ‘hhhhhaaaaaassssss,‘ and I use that a lot. We actually have word warm-ups, (used as an intervention) which are starting with sounds, like segmenting three letter words and blending. We have the teacher’s assistant in the afternoon working with one of our students.”</td>
</tr>
<tr>
<td>Teacher 3 stated, “We teach a lot of sounds in our reading program, we start with two letter blends and it is usually one on one with the reading teacher (teacher assistant) or classroom teacher, as they need them. Depending when they need them, small group or individual, like the silent e or the blended vowels. At circle, we clap compound words at the end of first grade year. Echoing songs and rhythm patterns are things we do at circle as we are waiting for kids to come to circle.” Teacher 3 stated that they did “I spy…” from the manual once or twice, and should probably do more often.</td>
<td></td>
</tr>
<tr>
<td>Classroom 3</td>
<td>Teacher 5 shared, “I haven’t been taught specific ways to use jobs on the shelf with Montessori curriculum for phonological awareness for rhyming or syllables. Most happens at circle, which is great and there is peer support, maybe peer pressure for that. Rhyming isn’t really taught in Montessori lessons. But I have done things at circle. What’s challenging without having something adopted is make it up as you go. I would be more apt to use a CD or I have one chart that targets that. I make it up as I go. One thing I do is clap syllables with the student’s name.”</td>
</tr>
</tbody>
</table>
According to the Read Naturally website, Word Warm-ups is a Read Naturally intervention program that develops a student’s accuracy and automaticity in decoding through modeling by the teacher or assistant, followed by repeated practice. While Read Naturally uses paragraphs and short stories of text to build accuracy and fluency, Word Warm-ups targets words read in rows and columns with common phonics and syllable patterns.

Teachers were most familiar with teaching phonological activities such as rhyming, onset-rime, and blending and segmenting phonemes. They felt that the curriculum provided ample practice with blending by the use of the two and three phoneme blend booklets and wheels. Practice with blending phonemes is an intermediate step in the Montessori reading program. Two and three phoneme booklets or wheels are read to a teacher upon completion of learning their sounds and before Word Building begins. They also felt the same about segmenting phonemes, but noted these skills are taught and practiced one on one or very small groups of two or three and always with text or moveable alphabet, not as an aural/oral task. Three of the teachers shared concerns that they felt the curriculum may not address all aspects of phonological awareness and they needed to supplement. The researcher agrees that the children receive practice with blending phonemes and extensive practice with segmenting with text, but not sufficient aural/oral exposure.
Second Question

Table 18 presents the second question and summarizes the teachers’ responses.

Table 18

Second Question and Answers

<table>
<thead>
<tr>
<th>Question</th>
<th>What additions or modifications to the curriculum have you incorporated to teach phonological awareness?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom 1</td>
<td>Teacher 2 was quick to share her additions to the curriculum, “It probably starts in the morning, with our sing along with a really, great song like, “Bee a Bay,” that keeps the same initial sound, the onset, and changes the rime as you go along in a pattern. ‘Apples and Bananas,’ ‘Willaby Wallaby,’ or ‘Corner Grocery Store’ are all great songs that teach rhyming. I use a book I got at the private Montessori school I taught at beforehand, Harcourt Brace’s <em>Oo-pples and boo-noo-nooos: Songs and Activities for Phonemic Awareness</em> (Yopp, 1997). I also like to choose books that have rhymes for read aloud, so I read the first line and like to stop at the word and let the children fill it in the rhyme they think will be correct. I would be very interested if there are more ways to do it, I’d be open.”</td>
</tr>
<tr>
<td>Classroom 2</td>
<td>Teacher 3 shared, “We use a lot of rhyming books, stories, and music. We make up songs and use ones on CD’s. We don’t have a lot of alliteration in our books or songs, it’s more rhyming.”</td>
</tr>
<tr>
<td>Classroom 3</td>
<td>Teacher 5 said, “I don’t sing well, so I like to use songs on CD’s to teach rhyming or alliteration. I teach syllables by clapping student’s names at circle.”</td>
</tr>
</tbody>
</table>

It appears teachers are using implicit instructional methods by using music and books to teach rhyming. None of the teachers shared explicit examples for teaching rhyming, alliteration, or syllables. Using explicit instructional methods to teach concepts and including implicit activities would give a balanced approach to additions teachers are bringing to the classroom.
Third Question

Next, the researcher wanted to delve into information from the teachers that may have reflected the student’s scores on DIBELS (see Table 19).

Table 19

Third Question and Answers

<table>
<thead>
<tr>
<th>Question 3</th>
<th>What specific lessons address first sound fluency and phoneme segmentation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom 1</td>
<td>Object boxes and word building</td>
</tr>
<tr>
<td>Classroom 2</td>
<td>Object boxes and word building</td>
</tr>
<tr>
<td>Classroom 3</td>
<td>Teacher 5 believed her classroom had more object boxes and spent more time at first sound fluency and phonemic segmentation.</td>
</tr>
</tbody>
</table>

All teachers shared they believed the object boxes taught first sound fluency. This is true. However, the instruction and practice of the object boxes did not give students adequate instruction or practice when words were heard aurally and students were to perform the task orally back to the teacher for the DIBELS assessment. Teachers stated that phoneme segmentation was taught through Montessori Word Building. This again is true. However, one teacher insightfully commented that they never practice segmentation orally; it was always in conjunction with the moveable alphabet, but conveyed they could do more of that. This same lack of aural/oral training may apply to students’ scores of phoneme segmentation on DIBELS.
Final Question

The researcher posed this last question for teachers to consider their instructional practices of phonological training throughout their year (see Table 20 below).

Table 20

Fourth Question and Answers

<table>
<thead>
<tr>
<th>Question 4</th>
<th>How and how often are students reviewing phonological awareness activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom 1</td>
<td>Teacher 2 stated, “Daily we are doing activities. We have our teacher’s assistant doing the sandpaper letters and reading daily. We have parents reading with students every day. My concern is that we have students who do not have all their sounds and when they get into second grade, they still need the word building program and it is not available to them, and they are not ready to do the Albanesi curriculum for language, let alone read the instructions.”</td>
</tr>
<tr>
<td>Classroom 2</td>
<td>Teachers 3 and 4 shared, “They receive it every day but more through word building daily. We really don’t do anything whole group orally. Everything is one on one. Maybe it’s something we could do more of.”</td>
</tr>
<tr>
<td>Classroom 3</td>
<td>Teacher 5 declared she tries to do something daily as part of circle.</td>
</tr>
</tbody>
</table>

Teachers believe they are reviewing phonological awareness activities daily mainly through circle activities and Montessori Word Building. Teachers shared concerns that maybe they should be doing more with phonological awareness activities.
Summary of Teacher Interviews

Teachers were very knowledgeable about the curriculum in their classrooms. They follow the curriculum guide as a guideline for pacing for each child as an individual, thus, differentiating instruction. Teachers were not familiar with some of the lessons for phonological awareness in the manual and do not appear to be doing all of the lessons. Some teachers expressed they wished the curriculum provided them with more activities for phonological awareness, so they would not have to make it up on their own. Two of the teachers voiced that the differences in manuals and training, and some of the teacher-made materials, leads to variation among the classrooms. The researcher agrees with the teachers’ opinions.

Addressing Phonological Skills

This project has researched phonological awareness, examined the school’s curriculum, surveyed the instructional practices of the teachers, and investigated the California Common Core Reading Standards for Foundational Skills (California Department of Education, 2011). The following section will summarize in table form how the school is addressing phonological awareness sound units and skills through its curriculum and instructional practices, and which of the standards of Common Core standards are being addressed (see Tables 21-25).
Table 21

**Phonological Awareness—Rhyming: Common Core, Montessori Manual and Instructional Practices**

<table>
<thead>
<tr>
<th>Phonological awareness sound unit</th>
<th>Common Core tasks</th>
<th>Lesson in Montessori manual</th>
<th>Lesson from manual taught at school and frequency</th>
<th>Additional resource or instructional practice used to teach skill and frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhyme</td>
<td>Kindergarten—Recognize and produce rhyming words.</td>
<td>Rhymy-Blimy</td>
<td>Not taught</td>
<td>Books and songs. Taught and practiced frequently.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rhyming Objects</td>
<td>Variation is introduced in classroom 3 only. Available for students to use at will, so frequency varies.</td>
<td></td>
</tr>
</tbody>
</table>


Students are taught implicitly to recognize and produce rhyming words when they listen to their teachers read books and poetry that emphasize rhyming. Each classroom also enjoys rhyme through songs either by CD or by Teacher 2 playing guitar in Classroom 1. Teachers often delete a word from a book or song at the end of a sentence or line and let the students produce a rhyming word. Classroom 3 has a variation of “Rhyming Objects” that is taught to them. Then students may practice this skill, as they desire. Students have equal opportunities to recognize and produce
rhyming words in all classrooms. As Table 21 depicts, it appears the school is teaching and practicing rhyming frequently.

Table 22

Phonological Awareness–Alliteration: Common Core, Montessori Manual and Instructional Practices

<table>
<thead>
<tr>
<th>Phonological awareness sound unit</th>
<th>Common Core tasks</th>
<th>Lesson in Montessori manual</th>
<th>Lesson from manual taught at school and frequency</th>
<th>Additional resource or instructional practice used to teach skill and frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alliteration</td>
<td>None</td>
<td>None</td>
<td>Not applicable</td>
<td>Mainly songs. Frequency varies.</td>
</tr>
</tbody>
</table>


Researchers agree that alliteration is an important skill of phonological awareness (Bradley & Bryant, 1983; Cardosa-Martins et al., 2011; Yopp & Yopp, 2009). However, Common Core (California Department of Education, 2011) and the Montessori manual do not address alliteration (see Table 22). Teachers agreed effort was given to rhyming when compared to alliteration. Through teacher interviews, it appears that instruction in alliteration is being addressed at the school through songs and occasionally books, although infrequently. The might partly explain student’s difficulties with First Sound Fluency.
As shown in Table 23, Common Core Standards for syllables include counting, pronouncing, blending, and segmenting syllables in spoken words (California Department of Education, 2011). Teachers are modeling how to segment syllables by speaking and clapping a student’s name during circle time. The teachers did not share any additional instructional practices or resources used for syllables. Instruction in counting, pronouncing, and blending may not be happening at the school.
Table 24

Phonological Awareness–Onset-rime: Common Core, Montessori Manual and Instructional Practices

<table>
<thead>
<tr>
<th>Phonological awareness sound unit</th>
<th>Common Core tasks</th>
<th>Lesson in Montessori manual</th>
<th>Lesson from manual taught at school and frequency</th>
<th>Additional resource used to teach skill and frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset-rime</td>
<td>Kindergarten– Blend and segment onsets and rimes of single-syllable spoken words.</td>
<td>I Spy… Initial Sounds with Objects</td>
<td>Variation is taught. Frequency varies.</td>
<td>Moveable alphabet with sound boxes used. Frequency varies.</td>
</tr>
</tbody>
</table>


As previously explained, this Montessori lesson begins aurally with the teacher speaking one word at a time, and the child responding orally by segmenting the sounds for onset followed by the rime (Rigg, 2004). At the school, a variation on the lesson is taught, different from the manual (see Table 24). The teacher will first instruct the child aurally to show how to segment an onset from its rime. The teacher also will model how the onset is blended with the rime to form words. Then a child works independently to form columns of objects under moveable alphabet letters corresponding to the initial sound. The practice then becomes a measure of encoding as the student thinks of the word to isolate the initial phoneme, rather than hearing the word aurally from the teacher as practice. However, if the student has placed an object
under the incorrect constituent initial sound, then re-teaching returns to an aural task.

Additionally once a student progresses through the sound boxes, the student will not practice this skill again. Teachers did not describe any other instructional practices or resources for teaching onset-rime, with spoken words as defined by Common Core.

Nevertheless, as you may recall teachers teach onset-rime with text through flip books and wheels to reinforce and practice blending.

Table 25 displays information from Common Core, Montessori manual and the instructional practices relayed from teacher interviews on phonological awareness at the phoneme level.

Table 25

Phonological Awareness—Phoneme: Common Core, Montessori Manual and Instructional Practices

<table>
<thead>
<tr>
<th>Phonological awareness sound unit</th>
<th>Common Core tasks</th>
<th>Lesson in Montessori manual</th>
<th>Lesson from manual taught at school and frequency.</th>
<th>Additional resource used to teach skill and frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten—Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words. (This does not include CVCs ending with /l/, /r/, or /x/.)</td>
<td>Montessori Word Building</td>
<td>Yes, followed by daily practice, once sounds and blending wheels or booklets are mastered.</td>
<td>Object boxes for initial and medial sounds with moveable alphabet using CVC words.</td>
<td></td>
</tr>
<tr>
<td>First grade—Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I spy… Variation is taught once or twice with initial sound in classroom 2. No
Kindergarten—**Blend** two to three phonemes into recognizable words. First grade—Orally produce single-syllable words by **blending** sounds (phonemes), including consonant blends.

<table>
<thead>
<tr>
<th>Kindergarten—<strong>Blend</strong> two to three phonemes into recognizable words.</th>
<th>First grade—Orally produce single-syllable words by <strong>blending</strong> sounds (phonemes), including consonant blends.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montessori Word Building</td>
<td>Yes, followed by daily practice, once sounds are mastered.</td>
</tr>
</tbody>
</table>

First grade—**Segment** spoken single-syllable words into their complete sequence of individual sounds (phonemes).

| First grade—**Segment** spoken single-syllable words into their complete sequence of individual sounds (phonemes). | Montessori Word Building | Yes, followed by daily practice, once sounds are mastered. | No |

Kindergarten—**Manipulation** Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.

| Kindergarten—**Manipulation** Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words. | Tricky Vowel Game | No | No |

First grade—**Distinguish long from short vowel sounds** in spoken single-syllable words.

| First grade—**Distinguish long from short vowel sounds** in spoken single-syllable words. | No | No | No |

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Students are isolating initial and medial phonemes by working with the Object Boxes in all three classrooms. Students have daily opportunities to segment words into their phonemes with the Montessori Word Building program, after they have learned their sounds. As mentioned earlier, teachers give the initial lesson of instruction with object boxes and Montessori Word Building aurally and model for students how these
tasks are completed. Albeit, the aural component is missing once a child begins working independently through the reading program, unless correction to reteach a particular sound is necessary. However, students are blending phonemes when they read their built words to the teachers before recording, but are not doing this skill on a strictly aural-oral basis. It does not appear manipulation (adding or substituting) of phonemes to form new words, or distinguishing long from short vowels in spoken one-syllable words is happening at the school.

**Summary**

Instruction in word awareness, phoneme identity, phoneme categorization, and manipulations of phonemes are not happening at the school. While rhyming lessons are available through the Montessori manual (Rigg, 2004), teachers prefer the use of books and songs. Alliteration is practiced infrequently. It appears the “I Spy” lesson was only given once or twice in Classroom 2 to teach initial sounds at the aural-oral level. Syllables are only being taught through clapping students names at circle. Onset-rime is taught through reading nonsense words and flipbooks at the school, however not taught with just spoken words. Blending and segmenting phonemes are taught as part of Montessori Word Building programs, but is not practiced aurally or as an oral skill.

Teachers themselves lacked knowledge of phonological and phonemic awareness skills and instructional activities. They were not using the most current Montessori manuals for lessons that address phonological awareness, but felt a push to begin Word Building. It does not appear that teachers understand that teaching
phonological skills lays a better foundation for reading. Yet, the four interviewed teachers were very open in their desire to learn.
Chapter 5

DISCUSSION AND RECOMMENDATIONS

Findings from an analysis of DIBELS data revealed significant weaknesses in students’ phonological awareness tasks of First Sound Fluency (K) and Phoneme Segmentation Fluency (K and 1st grade). An examination of the school’s curriculum, Common Core, and teachers’ interviews found several skills of phonological awareness were not being taught and revealed a lack of aural/oral training for students. This chapter begins with a further look at the DIBELS results. This is followed by a discussion about the changes the school has recently made in reading assessments and the curriculum guide for kindergarten and first grade. Next is a review of the phonological awareness curriculum for the school and instructional practices by teachers with recommendations for meeting Common Core standards and best practices found in research. Finally, recommendations for future research complete this chapter.

Phonological Awareness

DIBELS

*Kindergarten first sound fluency versus phoneme segmentation fluency.*

Twice as many kindergarten students across all three classes (20%) were core at the middle of the year in Phoneme Segmentation Fluency than were core in First Sound Fluency (9%). This is an unexpected result since First Sound Fluency is supposed to be developmentally easier than Phoneme Segmentation Fluency (Adams, 1990; Moats,
Two possible explanations are:

1. The students did not fully understand the task including critical terminology such as “first.”

2. The teachers spent much more instructional time on segmenting all the sounds in a word than just identifying the first sound.

The second explanation might be the best cause for students’ scores. Students spend a lesser amount of time isolating phonemes in the classrooms than they do segmenting phonemes through Montessori Word Building. Once students begin Montessori Word Building, there is not a return to practice the earlier skill of isolating the initial phoneme. In addition, teachers provide more (aural) instruction in segmenting phonemes when they first introduce Montessori Word Building to kindergarten students, and then the instruction tapers off as the child begins to work more independently.

**First grade segmentation fluency.** In Chapter 4, results from DIBELS displayed that no first grade students met core benchmarks for Phoneme Segmentation Fluency using the kindergarten criteria (see Table 16). In addition, a larger percentage of first graders (89.5%) showed a need for intensive instruction compared to kindergarten (70%) (see Table 14). This was very surprising, as one would expect the first grade population to assess superior at this skill when compared to the kindergarten population.
This suggests that classroom instruction that normally would result in students knowing more about orally segmenting phonemes in first grade may not have been present in the classrooms being assessed. Likewise, practice to maintain the oral skill of phoneme segmentation may also not have been present. One possible explanation might be once students have been introduced to Montessori Word Building in kindergarten, they become more skilled at encoding a word using the moveable alphabet in first grade. There may be less direct aural instruction from teachers as first grade students generally work more independently than kindergarten students do. The only time a student would hear a teacher segment a word is upon completion of their word building and only if they made an error in their spelling, when teachers check their work before reading the words to the teacher. As teachers’ interviews revealed all phoneme segmentation is practiced using Montessori Word Building and never on a strictly aural/oral basis.

**Recommendation.** To improve students’ phonological awareness and meet California Common Core State Standards (CA CCSS), it is recommended the school consider increasing direct instruction and practice in isolating initial phoneme in a *spoken* word and segmenting *spoken* single-syllable words into their complete sequence of individual phonemes.

**Changes in the School’s Reading and Phonological Awareness Assessments**

**Kindergarten.** While DIBELS had been one of the three main reading assessments from 2011 to 2013 for kindergarten, it was decided for the 2013-2014 school year, to drop all DIBELS assessments based on the time it took to administer.
Since the 2013-2014 assessments no longer include DIBELS First Sound Fluency or Phoneme Segmentation Fluency, there are now no phonological awareness assessments being given during kindergarten.

**First grade.** DIBELS assessments are still being used for first grade in the 2013-2014 school year. The phonological awareness assessment in DIBELS for first grade is Phoneme Segmentation Fluency.

**Recommendations for Assessing Phonological Awareness**

As research has shown both correlational and causal relationship between phonological awareness and reading, and CA CCSS state students are to “Demonstrate understanding of spoken words, syllables, and sounds (phonemes)” (California Department of Education, 2011), it is strongly recommended the school take action to incorporate phonological awareness assessments back into its routine kindergarten universal assessments.

What assessments should the school giving? It should be noted that some phonological skills are more critical than others are. That being said, early informal assessments of precursor skills (e.g., word awareness, rhyming, blending and segmenting syllables) might help to identify those students who might later struggle with reading. Then a more concentrated effort to improve these students’ phonological awareness with additional small group explicit instruction is advised for the school to consider.

One option for the school is to reinstate DIBELS kindergarten phonological awareness assessments of First Sound Fluency and Phoneme Segmentation Fluency.
The researcher believes this is the best choice for the school as these test *spoken* words and sounds. Nonsense Word Fluency is also a DIBELS kindergarten assessment the school used to give and is recommended for reinstating for its critical instructional information regarding blending and decoding phonemes. On the other hand, to consider just administering Phoneme Segmentation fluency, to address the time issue and collect data that informs instruction.

An alternative for the school to consider is the following two kinds of assessments of phonemic awareness: blending and segmenting. Blending and segmenting are more advanced skills of phonological awareness and critical precursor skills for reading fluency and spelling. Since Montessori does expect kindergarten students to read and spell CVC words. It makes a lot of sense to assess blending and segmentation skills. Note that the CA CCSS Foundational Skills (California Department of Education, 2011) does expect kindergarten student to blend two and three phoneme words and to identify the first, middle, and final sounds in CVC words (except those will /l/, /r/, and /x/).

**Blending.** Blending phonemes is crucial to reading fluency. Blending does need to be assessed. One way is an analysis of the Basic Phonics Skills Tests (BPST) (Shefelbine, 1997) that the school already gives as part of its universal assessments. The second is to use DIBELS Nonsense Word Fluency to meet this need. The last suggestion for consideration is an aural assessment “Phonemic Awareness: Blending Sounds” (Shefelbine, 2006) which recommends assessing a student’s ability to blend sound units from syllables to three phoneme words four times per year.
Segmenting. Segmenting phonemes should also be assessed because of its importance to spelling. DIBELS Phoneme Segmentation Fluency met this criterion and should be reconsidered for implementation back into the kindergarten universal assessments. Another assessment the school might consider is the “Yopp-Singer Test of Phoneme Segmentation” (Yopp & Singer, 1995) which assesses a student’s ability to segment two and three phoneme words.

Changes in the Curriculum

Curricular guides. As a side note, the curriculum guides have recently been rewritten with the inception of CA CCSS, and became available to teachers in August, as the new school year (2013-2014) commenced. The documents are available to teachers via the network’s e-chalk account, in the teacher resource tab. There are now separate curriculum guides for kindergarten and first through third grades. The curriculum guides were compiled through a series of brainstorming sessions with curriculum level lead teachers from all of the network’s campuses. One dean, from one of the network’s schools, oversaw the meetings and wrote the guide.

Kindergarten. The kindergarten curriculum guide includes a heading in its table for Reading Standards for Foundational Skills, the standards are directly written out from CA CCSS Foundational Standards.

The list is the nearly identical as the 2009/10 guide, but includes one addition “read aloud by teacher.” Read Aloud is a speaking and listening standard of California Common Core and a best practice for developing literacy, not a phonemic awareness concept. As stated earlier, initial sound, ending sound, and middle sound are phonemic
awareness concepts, so these concepts are correct under this heading, a good change in the curriculum guide. Rhyming is a phonological awareness activity. Tracking, puzzles, and patterning are visual discrimination exercises. Opposites and sequencing are whole language exercises. Sound recognition and high frequency sight words are Common Core Foundational Standards of Phonics and Word Recognition, 3a and 3c. Note that for grade 1 and beyond, it’s “grade-level” irregular sight words.

**First grade.** The lower elementary curriculum guide (1st-3rd) contains the CA CCSS printed as “FS. PA. 2. a, b, c, d” for August through June for first grade, rather than the actual written out standards as the kindergarten guide does. However, since most teachers would not know this code refers to the first grade phonological awareness standards under CA CCSS Foundation Standards (see Table 1), it makes sense for the school to include the actual standards and not just the codes.

Each of the three grades (1st-3rd) has a scope and sequence for the Montessori lessons and curriculum for each calendar month, as well as a separate page with the Common Core standards. The scope and sequence is very similar to the 2009/10 version; however, what used to be one subject page for the year per grade level, is now 63 pages long in its entirety due to its formatting. Besides the CA CCSS reference to phonological awareness, no lessons or curriculum are suggested for teaching specific phonological awareness standards. It is important to note the CA CCSS does not specify curriculum either.
Skills or Tasks Not Found in the School’s Curriculum

Some skills are precursors to more critical phonological skills. For instance, students need to work with larger units before they work with smaller units. The recommended sequence of instruction for word awareness and phonological awareness is word awareness, rhyme, alliteration, syllables, onset-rime, and phonemes with size of sound unit as an additional variable.

**Word awareness.** No word awareness lessons were found in the in school’s curriculum (Rigg, 2004) or were found in the CA CCSS Foundational Standards. However, Common Core Appendix A (National Governors Association Center for Best Practices and Council of Chief State School Officers [NGAC], 2013) includes the following word awareness activity in their general progression of phonological awareness skills (Pre K-1), “Move a chip or marker to stand for each word in a spoken sentence” (p. 18). Recommendations by researchers include instruction in word awareness until students show an understanding that our language consists of sentences of different length and words themselves have different length (Adams, 1990; Adams et al., 1998; Ehri, 1975; Karpova, 1955 as cited in Adams, 1990). It is recommended the school incorporate word awareness tasks in its instructional practices as addressed in chapter 2 and Common Core Appendix A.

**Aural and oral instruction.** Most of the CA CCSS Foundational Skills for phonological awareness are aural and oral in nature. When teachers were interviewed, they said their instructional practices do not include this, but felt they “should do more of it.” Therefore, it is advised that teachers give instruction aurally and let students
respond orally for meeting the CA CCSS discussed below. Practice should also be happening routinely in each of the three classrooms with *spoken* words. Further aural/oral routines are necessary when students cannot read the complex print units, but still might be helpful for CVC blending and segmenting.

**Alliteration.** Through teacher interviews, it was discovered that alliteration instruction was infrequent and implicit through exposure to songs and books. Correlations showed a particular disadvantage concerning reading disabled readers not being able to name the same initial phoneme (Bradley & Bryant, 1983). While the term “alliteration” is not mentioned in CA CCSS (California Department of Education, 2011) it is mentioned in Common Core Appendix A “repetition and creation of alliteration during word play” with examples such as “Nice, neat Nathan” and “chewy, chunky chocolate” (NGAC, 2013, p.18). Further, alliteration is at least indirectly related to identifying the first sound in a word, which is part of the Foundational Skills. It is therefore recommended that the school consider adding more alliteration tasks to their instructional practices, such as those given in chapter 2.

**Instruction in counting, pronouncing, and blending syllables.** While teachers at the school do appear to model segmentation of syllables, they did not state they are giving instruction in counting, pronouncing, or blending when interviewed. CA CCSS syllable tasks include counting, pronouncing, blending, and segmenting spoken words (California Department of Education, 2011). Researchers (Adams et al, 1998; Liberman et al., 1974; Share & Blum, 2005; Turner, 1998; Yopp & Yopp, 2009) agree syllables are easier than smaller sound units of onset-rime and phonemes and
recommend instruction of syllables. It is recommended the teacher teach students to count, pronounce, blend and segment syllables.

**Blending and segmenting onset and rime.** Blending onset-rime in print is taught frequently at the school through the use of flip books and wheels. However, blending and segmenting tasks with *spoken* language are not being taught or practiced at the school, as CA CCSS state (California Department of Education, 2011). One recommendation would be to explicitly follow the manual’s instructions for “I spy…Initial Sounds with Objects” emphasizing the onset from its rime orally, then by modeling both blending and segmenting (Rigg, 2004). Best practices for instruction suggest as with all phonological tasks–teacher instruction and modeling first, then students should practice as a group, and finally teachers should assess for mastery by individual students.

**Phoneme identity.** Phoneme identity was identified as an important skill in research (Bradley, 1989; Bradley & Bryant 1978, 1983, 1991). While phoneme identity is missing as a task at the school and in CA CCSS, Common Core Appendix A does include an instructional approach of drawing the student’s attention to what their mouth is doing when making the sound. The example states, “Milk, mouth, monster /m/ – The lips are together and the sound goes through the nose” (NGAC, 2013, p. 19). Phoneme identity should be happening at the school.

**Phoneme isolation.** Phoneme isolation of initial and medial sounds through the use of Object Boxes is happening at the school. Further, final sound was found
lacking from the instructional practices. It is recommended to include the lesson of isolating final sound from the Montessori manual (Rigg, 2004) to meet this CA CCSS.

**Phoneme blending and segmentation.** Blending and segmenting are daily components of the Montessori Word Building program. However, as discussed earlier aural/oral task instruction and practice are not happening. This lack of phoneme segmentation skill may be evident by students’ lower scores in first grade for DIBELS Phoneme Segmentation Fluency when compared using the same scoring criteria for kindergarten.

**Phoneme manipulation and vowel discrimination.** Manipulation of phonemes by adding or substituting phonemes, and distinguishing long from short vowel sounds is also recommended for the school to meet Common Core standards. It is further recommended that phoneme deletion be taught. Three spoken language activities are mentioned in Common Core Appendix A on page 20 (NGAC, 2013). For phoneme addition ask students, “What word would you have if you added /th/ to the beginning of ‘ink’?” *think*. For phoneme substitution, have students say “rope.” Then ask them to change /r/ to /m/ and ask, “What word would you get?” *mope*. For phoneme deletion, have the students say “park.” Then ask them to say “park” without /p/ *ark*.

A variation of the “Tricky Vowel Game” might be considered for meeting CA CCSS of distinguishing long from short vowel sounds. For instance, the teacher would hold up a little bed and say, “Bed or bead? Do we use the short vowel /e/ to form the word *bed* or the long vowel /ea/ to make the word *bead* to name the object I am
holding?‖ An activity such as this could be used to distinguish all of the long vowels from short vowels. Introducing with a concrete object first would keep to the Montessori tradition, and then progress to pictures.

**More Explicit Instruction**

At the school, rhyme is taught implicitly through songs and book, a practice recommended by researchers, Yopp and Yopp (2002, 2009). Snider (1995) recommends a more direct approach. Parts of Montessori Word Building are quite explicit (e.g., teacher modeling) while other parts are not (e.g., limited guided practice; use of continuous blending to scaffold the task when students struggle).

At the 3-6 age group level, teachers are taught in their Montessori programs that the lessons and language used should be as the manual states. An enhancement to the lesson “Rhyming Objects” (Rigg, 2004) would be to consider including an explicit definition of the word rhyme and to make the instructions more clear by saying, “Fan and sock? No. Fan and sock do not sound the same at the end.” Further, it is recommended to use words with one syllable. Keeping with Montessori tradition, the use of concrete items would be used first and then progress to pictures. It should also be noted that this lesson should be repeated until the content is mastered by students in recognizing rhyming words.

In Montessori classrooms, it is a common practice to trade out mastered jobs every month or two for new material to maintain the children’s interest. In order to maintain interest it is suggested rather than just remove rhyming material altogether as was done in Classroom 3, a new set of rhyme matches could replace the introductory
material in order to insure all students have adequate practice to master recognizing rhyme. To meet the other portion of Common Core Standards, this lesson should also include the students’ producing rhyming words (California Department of Education, 2011).

**Concerns**

_**Teachers.**_ Throughout the interviews, four of the teachers were very interested to hear research about how phonological awareness lays a foundation for their students’ later success with reading and spelling. Teachers shared they felt a push to get the students reading and using the Montessori Word Building program. The researcher shared that the investment in time would be well spent with phonological activities. Teachers were also very excited to hear the researcher would be making recommendations, as they were eager to learn more. Two of the teachers voiced that the differences in manuals and training, and some of the teacher-made materials, leads to variation among the classrooms. The researcher agrees with the teachers’ opinions.

Here is an example of how variations might happen regarding curriculum. There is a contradiction between the 2013-2014 curriculum guide and the most current Montessori manual (Rigg, 2004) with regard to the sequencing of teaching sounds (sandpaper letters) to students. The curriculum guide states the letters should be taught in this sequence: smta; dnri; fgbe; hcpo; ljwu; qxz; ykv. Whereas, the manual (Rigg, 2004) suggested sequence for sounds is smta; fnde; crpi; hlbo; wkgu; jvqu; xyz. Having inconsistency between the two may create confusion for a new teacher as to which is the best sequence for instruction and how the classroom is best set-up with
the materials. Likewise for a seasoned teacher who was used to following the Montessori manual by Rigg (2004), may move to a different classroom set up for following the curriculum guide.

**Researcher.** Upon completion of this study, the researcher would like to address a few concerns she would propose the school to consider.

**Tradition.** There is a strong weight of keeping to the tradition of Montessori at the school. Maria Montessori was first a doctor, and then became a researcher and teacher. This researcher strongly believes that because of Maria Montessori’s scientific background that she would be open and embrace current research that has shown the importance of phonological awareness to reading. She would also be open to bringing new research into the classroom and the teacher’s instructional practices and lessons. Some might not embrace current research and instructional practices being brought into their classrooms because they are not “Montessori.” Implementing change might also be met with difficulty considering one of the teacher’s reluctance to participate in this study.

**Training.** The researcher found that the initial DIBELS reports from teachers had errors in administration and scoring. It was evident that teachers did not receive adequate training for DIBELS prior to the introduction of using this newly adopted assessment. In the following year, time constraints were given for the researcher when she was asked to present workshops for the network of schools.

With implementation of Common Core, the teachers have been encouraged to go to a neighboring larger district workshops and the network of schools will pay the
workshop fee. All teachers also attended a one-time, three-hour training writing and Common Core by one of its former teachers.

Training has been a recurring theme expressed by teachers, who want improved and more thorough training with new assessments and programs the network of schools adopts. Training should include an explanation of the *what*, the *why*, the *when*, and the *how*. Teacher training should also include more than just a one-time demonstration. Modeling should be followed by mock practice followed by classroom observation.

*Curriculum.* Since there were components of the former curriculum guide that teachers did not teach, it is also a concern that even though the curriculum guide now contains Common Core standards, these new standards might not be fully implemented in all the classrooms. The researcher is not aware that any new curriculum that has been added to the classrooms that address the CA CCSS Foundational skills.

The teachers spoke of having to make up their own phonological awareness activities and wanted to learn more about phonological awareness in general. Two research-based books that contain phonological awareness activities are recommended for the teachers and school to consider: *Phonological Awareness Handbook for Kindergarten and Primary Teachers* (Ericson & Juliebô, 1998) and *Phonemic Awareness in Young Children: A Classroom Curriculum* (Adams et al., 1998). The researcher prefers the book by Adams (1998) because it is a more comprehensive book and contains more educational games and activities for enhancing phonological
awareness, as well as examples. Further, both books give information for informal and formal assessments of phonological awareness. *Phonological Awareness Handbook for Kindergarten and Primary Teachers* recommends simple pre-teaching and post-teaching assessments of rhyme detection, phoneme blending, and phoneme segmentation and includes sample tests in their appendices (Ericson & Juliebø, 1998). Chapter 10 of *Phonemic Awareness in Young Children: A Classroom Curriculum* (Adams et al., 1998) contains descriptions, administration and scoring instructions for assessments of detecting rhymes, counting syllables, matching initial sounds, counting phonemes, comparing word lengths, and representing phonemes with letters.

**Missing Components in Montessori Word Building.** While the researcher was analyzing the curriculum for phonological awareness, she also investigated the school’s reading program. Several phonics sounds were missing from the Montessori Word Building program. Missing phonetic components in Montessori Word Building at the school are: r-controlled (*er, ir* and *ur*), long vowel digraphs (*igh* and *ow* like *low*), other vowel digraphs (*au* like *Paul*), consonant digraphs (**wh, tch, ph**; the school has included *th* like *cloth* (unvoiced), but not the *th* (voiced) like that), and they do not include inflectional endings. Addition of the following components would make for a more thorough and complete reading program.

**Future Action Research**

Future action research might include:

1. Determining the most important and informative assessments for phonological awareness, so students are not overly assessed on each and every sub-skill.
2. Develop guides that not only describe instructional routines in a clear manner but also contain content that can be used across a series of lessons, a labor-intensive process for teachers to do on their own.

3. Develop more explicit instructional routines for students who do not progress. This might include a more systematic progression from words to syllables to onset and rimes to phonemes.

**Conclusion**

This descriptive mixed methods study revealed significant weaknesses in students’ phonological awareness skills of DIBEL’S assessments of First Sound Fluency for its kindergarten students and Phoneme Segmentation Fluency for both kindergarten and first grade students. An examination of the school’s curriculum and teacher interviews to determine instructional practices in phonological awareness training for its students found several skills that current research deems important but that were not being addressed by teachers. Recently California has adopted Common Core standards and has expectations for students with regard to meeting foundational standards of phonological awareness. This study made recommendations for the school to consider for instruction to enhance student’s phonological awareness. In addition, recommended that more research be done on which phonological skills are most critical to assess and teach.

The study’s limitations temper its conclusions. First, not all of the teachers participated in this study, and the use of instructional assistants who were not part of the study. Other possible limitations might include a higher SES population; this
Montessori site might not be comparable to others within and outside California; during a study right when standards are being changed, a time when confusion and uncertainty is more common; the absence of any teacher observations, and problems associated with research involving my own colleagues.
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