A comparison of three approaches to literacy acquisition : traditional phonics, whole language, and spelling before reading
by Roxanne L Sporleder

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Abstract:
A quasi-experimental research design was used to compare three approaches to literacy acquisition in nine first-grade classrooms to determine if there was a significant difference in achievement in phoneme segmentation, reading, and spelling development at the end of twenty-one weeks of instruction. All nine classrooms within one school district with a total of 151 first-grade students received instruction in reading following the district curriculum guidelines and using a newly adopted literature-based reading series. The basal provided a wide variety of opportunities to read, write, and talk about meaning.

In addition to the basic reading program, students in the nine classrooms received differentiating instruction. Three classrooms were introduced to phonics within the context of literature and learned spelling using word families. Three classrooms received direct instruction in phonics using a traditional approach to learning letter sounds, blending words, and reading short controlled texts. These also learned spelling using word families. Another three classrooms received instruction in the letter representations of phonemes with an emphasis on metacognition and spelling words before ever reading them.

At the beginning of the school year, students were given baseline tests to identify phoneme segmentation skills, letter knowledge, spelling development and reading ability. At the end of twenty-one weeks, these same tests as well as the WRMT-R were administered.

The results showed that age, gender, and socio-economic status were not differentiating factors. There was also no difference among the three groups in the ability to recognize and write letters, to identify sounds of letters, and to hear the separate sounds of speech (phoneme segmentation skills). However, the three classrooms that introduced students to the letter representations of phonemes and engaged them in reconstructing the orthographic code by spelling words before ever reading them, scored significantly higher in basic reading skills, total reading ability, and spelling achievement. This approach was more effective than either the direct phonics classrooms or the indirect phonics classrooms. It also more effective than using word families to increase reading and spelling achievement.

Recommendations for further study include applying this approach to literacy to a variety of demographics, grade levels, and curriculums.

A COMPARISON OF THREE APPROACHES TO LITERACY ACQUISITION:

TRADITIONAL PHONICS, WHOLE LANGUAGE,

AND SPELLING BEFORE READING

by

Roxanne L. Sporleder

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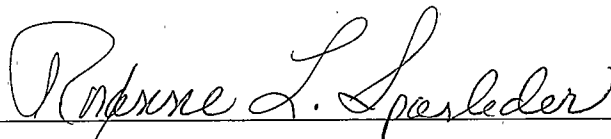
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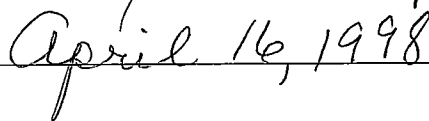
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ABSTRACT

A quasi-experimental research design was used to compare three approaches to literacy acquisition in nine first-grade classrooms to determine if there was a significant difference in achievement in phoneme segmentation, reading, and spelling development at the end of twenty-one weeks of instruction. All nine classrooms within one school district with a total of 151 first-grade students received instruction in reading following the district curriculum guidelines and using a newly adopted literature-based reading series. The basal provided a wide variety of opportunities to read, write, and talk about meaning.

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CHAPTER 1

INTRODUCTION

Introduction

One of the most critical tasks of the elementary school is to teach every child to read. Almost every student should be able to read age-appropriate materials fluently and to be able to extract meaning and knowledge from written text while enjoying reading. This ability to read is not only crucial to opening the door of opportunity to the individual student, but is essential for the maintenance of our democratic society.

In order to reach this goal, every first grade student needs to acquire basic reading skills because where a child stands in relation to age-mates at the end of the first year of school is roughly where one can expect to find that child to stand at the end of seventh or eighth grade. Poor readers tend to remain poor readers while good readers tend to make continued gains in reading skills (Juel, 1994a, 1994b). For this reason, methods used in beginning reading are critical in producing fluent, skilled readers.

Beginning Reading

Although beginning reading has been researched for several decades, there continues to be controversy as to how children best learn to read. Currently, two approaches dominate the discussion: traditional phonics and whole language.

Traditional phonics emphasizes the sequential introduction of isolated letter/sound correspondences which are practiced and then used to "sound out" words. For example, the teacher may introduce short *a*. Students would then "sound out" words that contain the short *a* and perhaps complete worksheets identifying words that use the short *a* by circling the short *a* in words. Student texts are controlled, containing only the words that have been introduced through the blending of sounds together. This means of learning how to read is dependent upon rote practice and direct instruction. However, some children have great difficulty with this process. "We know unequivocally that less skilled readers have difficulty turning spellings [letters and letter groups] into sounds . . . This relationship is so strong that it deserves to be identified as one, if not the defining feature of reading disability" (Share & Stanovich, 1995, p.7). Pressley and Cariglia-Bull (1995) state that "one of the biggest obstacles to word recognition and therefore print comprehension is the difficulty in decoding" (p. 30-31).

Besides the problems some students have with the decoding process, traditional phonics instruction is grounded in the rote decontextualized practice of specific skills based on behavioral theory. Moran and Calfee (1993) point out that although students may be familiar with the rules of phonics, they have difficulty applying them to actual reading activities. Students who memorize "when two vowels go walking, the first one does the talking" may not apply the principle when actually reading a text.

On the other hand, those who advocate that reading parallels how children learn to speak believe the acquisition of the print system will come naturally as children are engaged in reading and writing for meaning. Teachers give support and feedback as

opportunity and need dictate. Contextual clues are used to gain meaning and incidental references to sound-letter correspondences are utilized to help children learn the print code. However, dependence on contextual clues is not an acceptable solution for many students. "Reliance on contextual clues is a technique usually used by readers with poor decoding skills and correlates with low reading performance" (Share & Stanovich, 1995, p. 5-6). Chall (1983) found that primary-age students could compensate for moderately weak word recognition skills by using context, but as they reached middle school and high school, comprehension scores fell sharply. Chall concludes that the primary grades use words that children already know, but by the time they reach fourth grade, children with poor decoding skills fall behind in reading due to slow acquisition of academic vocabulary and a weakness in recognizing less familiar words.

Since decoding as the primary means for learning to read has traditionally been taught in a rote decontextualized fashion and appears to be difficult for some children, and at the same time reliance on contextual clues and incidental phonics instruction does not seem to solve the literacy problems of many children, what strategies are best in teaching beginning reading? Holdren (1995) and Juel (1994a) suggest implementing both phonics and whole language in the classroom:

> The debate that has occurred over these two positions [phonics and whole language] is an artificial one. . . No matter how bright, creative, and knowledgeable about oral language and the world a child may be, he or she cannot read and write well unless the code of written English is known. No matter how well the code is known, a child will not want to read or write well unless the child has been under the spell of a wonderful story or seen the value of communicating in writing. (p. 135)

Vail (1991) also suggests that common ground needs to be found. What, then, is the common ground?

The instructional philosophy undergirding whole language which emphasizes purpose, engagement, and social interaction can be applied to decoding and spelling (Henry, Calfee, & Avelar La Salle, 1989; Moran & Calfee, 1993). Moffett and Wagner (1992) suggest the kind of relationship that can exist between whole language and phonics:

> If we introduce into the old literacy debate both the child's viewpoint (that combining letters is a game) and the writer's viewpoint (that combining letters is a necessity), we may understand more precisely and more usefully the relationship between whole language and word particles. (p.32)

Letter-sound instruction can be taught explicitly, using methods that encourage cognitive reconstruction of the print code rather than the memorization of detailed objectives. Research on reading comprehension emphasizes constructive learning where readers understand text by virtually rewriting it (Palincsar & Brown, 1984). Calfee and Henry (1996) assert that "for phonics, the text is the system of English orthography" (p. 50). Since the spelling-sound system is a text in its own right, students engage in social interaction and constructive activities to understand the system. Spelling words using appropriate letter representations is a means to reconstruct the print code.

In a study of very young children who learned to read without intentional instruction, Anbar (1984, 1986, p.79) suggests eight possible stages in the process of learning to read. In that study, children took letters and put together words (encoding) before reading familiar books and before the sounding out of short, unfamiliar words

(decoding). Through play, children produced words from letter/sound combinations and thereby constructed an understanding of the print code. In a study done by this researcher, six children who learned to read early without intentional instruction also demonstrated a similar process in the acquisition of reading. These children built words with magnetic letters and/or wrote out words before being able to read beginning books or being able to "sound out" unfamiliar words. In both studies, the spelling of words occurred before the children read these words. Although the step of encoding is only one stage in the process of learning to read, it appears to be critical in learning to read using a natural process. It is a way to encourage the reconstruction of the print code through engaging the student in a purposeful activity.

Statement of the Problem

The problem of this study was to determine if there was a significant difference in the reading and spelling achievement among first-grade students at the end of twenty-one weeks who were taught beginning reading using

1. a literature-based reading program with incidental phonics

2. a literature-based reading program plus explicit instruction in traditional phonics or

3. a literature-based reading program plus explicit instruction in the letter-sound correspondences and subsequent spelling of words.

Figure 1 shows the basic differences between a literature-based curriculum, traditional phonics, and word building as a means of learning to read and write. The literature-based

program provides a wide variety of opportunities for children to read, write, and learn through

language activities that are whole and meaningful, utilizing the whole language philosophy of

instruction in a risk-free, supportive, language-rich environment. Children are introduced to

reading and writing by reading texts together and writing responses to the literature. A major

emphasis is placed on meaning and contextual clues for identifying words. Phonics is not the

primary means of learning how to read, although beginning and end sounds of words within a

text are discussed in order to help children become aware of the sounds of language.

Figure 1. Comparison of Three Approaches to Teaching Reading

Implicit, Incidental Phonics	Traditional Phonics	Word Building
Social Interaction	Rote memorization	Social Interaction
Look at whole; examine some parts	Decontextualized bits and pieces; used to construct whole	Look at parts as related to the whole
Grapheme to phoneme	Grapheme to phoneme	Phoneme to grapheme
Sounds of beginning/ end of words	Sounds of letter/letters	Spellings of sounds
Write and read	Read before writing	Write before reading
Invented spelling	Correct spellings	Guide in correct spellings Invented spelling in first draft of writing process
Child corrects	Teacher corrects	Child corrects

In this study, all nine first grade classrooms used a newly adopted literature-based reading

curriculum. In addition to the regular curriculum, three classrooms received direct instruction

in the individual sounds of letters through repetition and memorization using a traditional

phonics approach. After learning the sounds, children "sounded out" words using the new

sounds learned. Three other classrooms engaged in activities using the word building strategies in addition to the basic curriculum. After learning how to spell a sound such as the long *a* spelled *ai* as in *rain*, children constructed words using this spelling.

Need for the Study

Research on the effectiveness of spelling words before reading words has been virtually neglected as an important part of reading acquisition, although it is an identifiable stage in the process used by early spontaneous readers (Anbar, 1984,1986). Gunning (1995) observes that word building capitalizes on an "apparently natural tendency for students to seek out pronounceable word parts" (p. 484), but his research does not focus on the reading achievement of students using that procedure. Honig (1996, p.11) states that "writing or spelling out words (especially the words they are reading), which necessitates encoding sounds into letter patterns, is also one of the best ways to learn phonics." This statement implies the effectiveness of spelling words as a means to understanding phonics, but indicates that encoding is taking place as a reinforcement after the words have already been read. Research needed to be conducted that would determine the impact the spelling of words before reading may have on reading acquisition.

Another reason for conducting this study was the need for researched strategies that would assist teachers in reaching the goals of reading fluency and skill for every child. Although reading research has been conducted for almost six decades, the debate continues on how to teach children to read in an efficient and effective manner (Holdren, 1995). Which is best, traditional systematic phonics or whole language? Reading teachers who use direct,

systematic phonics may be successful with a large percentage of children, but find some

limitations working with children who have not been exposed to print material in the home or

have not had books read to them. Also, some children have great difficulty hearing the sounds

of words, and therefore in "sounding out" words (decoding). The methodical memorization of

phonetic rules often seems to be an exercise unrelated to the actual process of reading. Under

this system, students may spend hours filling out worksheets where they circle a particular

phonetic sound or parrot back rules but often fail to use and apply this knowledge when

reading text. In essence, the direct teaching of phonics and phonetic rules has not been a

satisfying way to teach some children to read.

If teachers had acquired comfortable methods that produced the desired reading

results, new strategies in the teaching of reading would be superfluous. But this is not the

case. In the spring of 1995, California's State Superintendent of Public Instruction created a

Reading Task Force to address the reading crisis where "a majority of California's children

cannot read at basic levels" (Every Child, 1995, p.1). This Task Force concluded that

attention must be given to direct, systematic skills instruction that is embedded within

literature and language-rich activities. In other words, there must be a meshing of the two

basic approaches to reading, "an appropriate blend of skills development and whole language

activities" (Every Child, p.14).

On the other side of the nation on July 12, 1995, forty professors and researchers in

linguistics and psycholinguistics from several universities in Massachusetts, including the

Massachusetts Institute of Technology (See Appendix A for a complete list of the forty

professors and researchers), wrote to the Commissioner of Education of Massachusetts

expressing grave concern over the status of reading education in that state:

> We are writing to raise certain questions about the inclusion of contentious. . .
> and scientifically unfounded views of language. . . In this view, the decoding
> of written words plays a relatively minor role in reading compared to strategies
> such as contextual guessing. This treats the alphabetic nature of our writing
> system as little more than an accident, when in fact it is the most important
> property of written English. . .a linguistic achievement of historic importance.
> (D. Pesetsky, et al., personal communication, p.1)

On July 14, 1995, a second letter was sent by two of these researchers.

> In the 1994 National Assessment of Educational Progress, Massachusetts
> (though highly ranked) was among ten states whose average 1994 scores were
> singled out as "significantly lower" than its 1992 scores. Fully 33% of
> Massachusetts public school fourth-graders test "below basic" in reading. (D.
> Pesetsky & J. Melvold, personal communication, p.1)

This current crisis has encouraged the meshing of two approaches to reading and

moving toward a balance between developing a literature-rich environment (whole language)

and the teaching of direct, systematic skills. However, if this is to be successful, research is

needed on strategic approaches to teaching beginning reading that will assist all children in

reading and overcoming the weaknesses of both methods. Helping children build words and

spell before reading, as suggested by early spontaneous readers, may prove to be a useful

strategy. When children are engaged in purposeful activities in reconstructing the print code

through word building, their understanding of the text of the system of English orthography

comes, not through rote practice and repetition, but through meaningful interaction with letter-

sound correspondences. Moran and Calfee (1993) propose "an approach that integrates

comprehension and decoding into a system designed around the principles of student-

centered, authentic instruction in a socially engaging context. This approach reflects the research on meta-cognitive and social-constructive literacy" (p.205).

There has been very little research in the area of metacognition as it relates to phonics and English orthography. Moran and Calfee (1993) state that the only reference to research on the metalinguistic awareness of the spelling-sound system per se is found in the two-volume Handbook of Reading Research (Ehri, 1991). Calfee and associates (1995) designed an integrated decoding-spelling program for students in kindergarten through second grade based on the metaphonics principle--learning to decode and spell by understanding letter-sound relations rather than by rote practice. This program is currently being researched in bilingual classrooms. It differs from the program used in this present research in that children produce nonwords as well as real words, the teacher writes the words rather than the student, several letters and sounds are introduced to students before they are able to build words, consonant blends such as *spr, tr,* and *st* are used, and not all of the phonemes are introduced. For this reason, a study needed to be done which allowed children to build only real words rather than nonwords, to write the words rather than the teacher, to spell words after being introduced to one sound rather than after several letters and sounds have been introduced, and to utilize only phonemes rather than blends.

Definition of Terms

Whole Word Approach

The whole word approach is a method of teaching reading whereby children are taught to look at the word as a whole and remember it. This method treats whole words as a

logogram, or a symbol that stands for a specific word or phrase. Rather than giving attention to the individual letters or sounds, the reader visually remembers the shape of the word in the same way one visually remembers the form of any object (Balmuth, 1982).

Whole Language

Whole Language is an approach to reading that encourages the immersion of the child in language and literature. The premise is that children will learn to read in the same manner that they have learned to speak when they are immersed in a literate environment. Children engage in real reading and real writing that is relevant and functional. Usually, whole language teachers approach the teaching of skills implicitly and indirectly rather than explicitly and directly as is done in traditional phonics programs and use a whole word approach to teaching beginning reading (Goodman, 1986). For example, the teacher may call attention to the word *ship* within a particular text and ask students if they hear any other words that begin the same way. The *sh* is not learned as an isolated spelling of a sound, but only seen within the context of a word.

Phonics

The term phonics was first introduced into the educational field and beginning reading by Horace Mann as "the sounds of the letters" (Balmuth, 1982). As such, phonics is the application of the letter-sound correspondences of our language in the teaching of reading. It is also used in the instructional sense to mean decoding-oriented instructional strategies typically used in the classroom (Feitelson, 1988).

Explicit phonics refers to the direct instruction of letter-sound combinations in a sequential, orderly manner, usually to teach children new words. Children learn sounds of particular letters and then blend the sounds to pronounce the word. In the traditional approach to teaching phonics, no word is usually read until students have drilled and mastered the sound of each individual letter and blend of letters in that word.

Ehri (1991) describes implicit phonics as the incidental instruction of phonics using a story context. Attention may be drawn to a particular word in a text without isolating the targeted speech sound. Children are to induce similarities between word beginning or ending with the same letter combinations, but children are not taught to pronounce or blend isolated sounds. Durkin (1984) found that teachers often deviate from their manuals and produce isolated sounds for students because they believe this is necessary to help students hear the separate sounds in words.

Decoding

Decoding is the ability to look at words or word segments and attach a sound to letters in those words. It involves blending the sounds together smoothly to create a word. When a student sees the word *map* but does not know how to read the word, he or she is able to sound each letter in sequence, /m/, /a/, /p/ in order to read the word.

Encoding

Encoding is the translation of oral words into written words. A spoken word can be spelled by paying attention to the separate sounds of that word. It is the opposite of decoding.

When a student hears the word *map*, he or she is able to distinguish the three sounds /m/, /a/, and /p/, and is able to translate those sounds into the letters.

Word-calling

Word-calling is the saying of a word without apparent understanding of its meaning either in isolation or within the context of other words. A student may read the word correctly, but is methodically repeating the sounds without attention to meaning. This is usually a symptom of weak meaning or syntactical cuing systems and/or weak decoding skills (Share & Stanovich, 1995). A student may spend so much time decoding a word that the meaning of the sentence or text has been forgotten.

Phonemes

The term phoneme comes from the Greek word "phono" which means "sound." A phoneme is the individual sound of a letter or a group of letters. For example, the sound of the letter *m* is a phoneme found in the words *man, make*, and *ram*. Since there is only one sound made by the letters *th*, it is also a phoneme. The word *strong* has one syllable, six letters, and five phonemes. Phonology is the study of phonemes and sequences of phonemes.

Morphemes

A morpheme is a language unit that carries one meaning and is therefore treated as one. For example, the *_ed* added to the end of verbs indicates past tense although it may be pronounced three different ways and contains two letters. The *_ed* is pronounced */t/* in *walked, /d/* in *fooled*, and */ud/* in *frustrated*. Venekzy (1970) points out the importance of

morphemes in understanding our language. Certain morphemes may change their spoken, phonemic forms, but retain their written spellings. For example, although the vowel in *know* and *knowledge* are pronounced differently, the spelling has been retained to show relationship in meaning.

Graphemes

The term grapheme comes from the root "graph" which means "to write." Although definitions for the term grapheme are often vague and even contradictory, in this study, a grapheme will be considered the letters and combinations of letters that represent phonemes in standard spelling (Balmuth, 1982). For example, *ai* is a grapheme for the long sound of the letter *a* as in the words *mail, tail,* and *maid.*

Onset and Rime

Onset and rime refer to the beginning and ending sounds or group of sounds found in a word. For example, the onset of *sat* is */s/* and the rime is */at/*. Children observe onset and rime more easily than the individual phonemes of the word, which in this case are */s/, /a/,* and */t/* (Goswami & Bryant, 1990). The onset for the word *string* is */str/* and the rime is */ing/,* but the phonemes are */s/, /t/, /r/, /i/,* and */ng/*. Onset and rime also differ from the syllable. Both *sat* and *string* only have one syllable, but can be divided into onset and rime or into the individual phonemes.

Phonemic Awareness

Phonemic awareness is the "conscious access to the phonemic level of the speech stream and some ability to cognitively manipulate representations at this level" (Stanovich, 1986, p. 32). It is the ability to recognize both consciously and analytically that a spoken word consists of a sequence of individual sounds. The student is able to hear the segments of sound in spoken language and to be able to consciously manipulate those sounds. A student is able to hear the three sounds, /m/, /a/, and /p/ in the word *map*. In contrast to phonics, phonemic awareness is hearing sounds and being able to recognize the possible letter or letter combinations that make that sound. Phonemic awareness emphasizes how a particular sound may be spelled; phonics emphasizes how a letter or letter combination sounds. In phonemic awareness, the student moves from phoneme to grapheme; in phonics, the student moves from grapheme to phoneme.

Phonological Awareness

Phonological awareness refers to the use of phonological information, or the sounds of the language, in processing written and oral language. It includes phonemic awareness, but also encompasses an awareness of the syllables of the language and onset and rime. Although phonological awareness is a broader term than phonemic awareness, it is often used in reference to phonemic awareness because it does include it (Wagner & Torgesen, 1987).

Orthography

Orthography is the representation of sounds of a language by written or printed symbols. It includes the study of the spelling of a language.

Invented Spelling

Invented or temporary spelling is using knowledge of letters and sounds in order to write words as they sound. These spellings only approximate conventional spelling. Such attempts change over time as the child's knowledge of the letter-sound relationship is refined.

Lexicon

"The lexicon of human speech is our inner abstract dictionary store." Although comparatively little is known about the processes of word recognition and speech, words "resonate to the meanings surrounding them in our experience, and they realize in varied hierarchies of syntactical structure records and visions of our conceptual world" (Henderson, 1992, p. 17).

Questions to be Answered

This study attempted to answer the question whether there is a significant difference in the reading and spelling achievement among first grade students who have been taught beginning reading using a literature-based reading program with incidental phonics, a literature-based reading program plus explicit instruction in traditional phonics, or a literature-based reading program plus explicit instruction in the letter-sound correspondences and subsequent spelling of words.

The questions answered in the study are as follows:

1.   Do age and method interact on the adjusted means of phonemic awareness?

2. Do gender and method interact on the adjusted means of phonemic awareness?

3. Do socio-economic status and method interact on the adjusted means of phonemic awareness?

4. Is there a significant difference in the adjusted mean of phonemic awareness among the treatment groups?

5. Is there a significant difference in the adjusted mean phonemic awareness of all males and the mean of all females?

6. Is there a significant difference in the adjusted means of phonemic awareness levels between the high and low socio-economic status?

7. Do entry phonemic awareness level and method interact with phonemic awareness?

8. Do age and method interact on the adjusted means of reading achievement?

9. Do gender and method interact on the adjusted means of reading achievement?

10. Do socio-economic status and method interact on the adjusted means of reading achievement?

11. Is there a significant difference in the adjusted mean of reading achievement among the treatment groups?

12. Is there a significant difference in the adjusted mean reading achievement of all males and the adjusted mean of all females?

13. Do entry phonemic awareness level and method interact with reading achievement?

14. Do age and method interact on the adjusted means of spelling development?

15. Do gender and method interact on the adjusted means of spelling development?.

16. Do socio-economic status and method interact on the adjusted means of spelling development?

17. Is there a significant difference in the adjusted mean of spelling development among the treatment groups?

18. Is there a significant difference in the adjusted mean spelling development of all males and the adjusted mean of all females?

19. Do entry phonemic awareness level and method interact with spelling achievement?

CHAPTER 2

REVIEW OF THE LITERATURE

<u>Approaches to Teaching Literacy</u>

The teaching of literacy has undergone several changes over the past two hundred years as research has explored different aspects of language acquisition. It is helpful to keep in mind that literacy is not confined to reading, but also encompasses writing, spelling, listening, and speaking. At different times in history, the importance of each of these has changed, especially in their relationship to each other, and as a result have impacted teaching methods and curriculum.

<u>Reading by Spelling: the Alphabet Method</u>

From the earliest educational records until the end of the nineteenth century, spelling was intimately tied to reading. Children were taught the order, names, and sounds of the alphabet, sometimes orally spelling nonsense syllables like *ab, ib,* and *ob,* and then orally spelling whole words until they learned them. Spelling was the primary means of learning how to read although some kind of phonics would sometimes be taught (Balmuth, 1982; Feitelson, 1988; Huey, 1908; Venezky, 1980). The most widely accepted textbook in eighteenth century America until Webster published his *Blue-Backed Speller* in 1783 was Thomas Dilworth's *New Guide to the English Tongue.* It was a combined speller, grammar, and reader and was the text from which Webster himself learned to read (Balmuth, 1982).

Webster (cited in Venezky, 1980, p. 12) stated that "spelling is the foundation of reading and the greatest ornament of writing." His Blue-Backed Speller was in print from 1783 until 1843 and sold about 100 million copies. As children learned to spell and read words, they engaged in purposeful reading and writing. Most students learned to read using some variation of this method up until about 1870 (Huey, 1908).

The Whole Word Method

Freidrich Gedike (1754-1803), a German teacher influenced by Rousseau and other "back to nature" philosophies, was the first to advocate a whole word approach to reading. He felt that only God could begin with the parts and move to the whole; man needed to start with the whole and study the parts. He published a primer in 1779 titled *Children's Book for the First Practice in Reading without the ABC's and Spelling* (Balmuth, 1982). Gedike states, "It is neither necessary nor useful to begin learning to read with a knowledge of the individual letters, but it is not only far more pleasant but also far more useful for the child if it learns to read entire words at once, because in this way it will be occupied immediately with whole ideas, but on the contrary, the ABC's and spelling supply the child with only fragments of ideas" (Gedike cited in Balmuth, 1982, p. 185). His emphasis was on making reading pleasurable and meaningful to the child. Critics accused him of ignoring the alphabetic principle of the German language although he maintained his method would assist a child in learning unknown words.

Others also advocated teaching of reading through a whole word approach. Pestalozzi (1746-1827) used a word-centered method that stressed association between words

and the objects they represented (Venezky, 1980). Jean Jacotot (1790-1840) emphasized using an entire book as the whole. In the end, his method developed into a system of using words to introduce phonic elements rather than the meaning-emphasis method used by Gedike (Balmuth, 1982).

Horace Mann (1796-1859), influenced by Jacotot, Pestalozzi, Gedike, and others, encouraged the adoption of the whole word approach and the separation of spelling from other school subjects. At this point in history, spelling was learned by rote memory and children learned to spell with words grouped by similarity of spellings. Mann stressed the importance of reading for meaning and strongly denounced the alphabet/spelling method, referring to the letters in the alphabetic lists as "skeleton-shaped, bloodless, ghostly apparitions, and hence it is no wonder that the children look and feel so deathlike, when compelled to face them. . . [Children] want some diversity, also, but the forms of the twenty-six letters have as little variety as twenty-six grains of sand" (Mann cited in Balmuth, 1982, p. 190). What Mann detested most was the practice of introducing letters and syllables without introducing words. However, he did not totally disregard attention to the letters and sounds. In fact, Mann is credited with introducing a new meaning to the word "phonics," namely "the sounds of the letters." He believed that as children read, letter sounds could be gradually introduced "so that the sound of a regular word of four letters is divided into four parts; and a recombination of sounds of letters makes the sound of the word" (Mann cited in Balmuth, 1983, p. 191). In essence, Mann's method was the introduction of a whole word method using phonics to analyze the words after the child had read the words.

Although a few texts were published during the mid-1800's using the whole word method, its use was not widespread until 1870 (Feitelson, 1988). Toward the end of the nineteenth century, some research was conducted on the whole word method of teaching which helped give it credibility to American education. Erdman and Dodge (1898 cited in Venezky, 1980) found words could be read at a distance even when separate letters could not be identified. Pillsbury (1887) found individuals could recognize words even when letters were omitted, blurred, or overtyped with an *x*. Most did not even see the error (cited in Venezky, 1980). Although these studies were conducted on adults who already knew how to read and may have been misapplied to beginning readers, these gave impetus to the whole word approach.

Edmund Huey (1908), influenced by this research, advocated the whole word approach and gives the following succinct description of the method:

> In the whole word method, the whole sound of the word is associated with the word total visual appearance, as is suggested just as the name of any other object comes to mind on seeing the whole object. Children learn the name of a word about as quickly as that of a letter and recognize the whole would about as quickly as they recognize a single letter. A word is not a sum of letter-names, anyway, nor even merely of letter-sounds. Its visual appearance, indeed, is not a sum of letter-appearances, but has a character of its own. (p. 272)

During the twentieth-century, the whole word method gained strength with the separation of spelling and other skills from the reading process. By the end of the 1920's the last of the phonic readers were published. After 1930 with the introduction of the first basal readers, a separation of reading, spelling, and writing occurred with an emphasis on controlled vocabulary and the teaching of isolated skills (Groff, 1995). Although the whole word method

was used, the original emphasis on reading meaningful texts was lost; literacy skills were separated into isolated subjects. Children learned to read *Dick and Jane* and took their weekly spelling tests. After learning to read, they were taught to write.

Whole language

Another approach to reading called whole language is actually a variation of many of the earlier whole word approaches. It found impetus through the research of Dolores Durkin (1966) and was developed into a method in its own right by researchers Kenneth Goodman and Frank Smith. In fact, Kenneth Goodman is credited as "father of whole language." When Huey's 1908 book on the whole word approach was republished in 1968, Smith noted the reason it was republished was "not as a monument but as a book whose time has come." He refers to it as "brilliant" and "a milestone" (Balmuth, 1982, p. 197).

The basic thesis of whole language is that children must see language in meaningful "wholes" and construct that understanding through a process that spans many years and encompasses many aspects of literacy. Writing, reading, speaking, and listening develop as children are immersed in authentic literature rather than under direct, systematic instruction in explicit skills (Cutting & Milligan, 1991; Kamii, 199).

> The child learning to read, like the child learning to speak, seems to need the opportunity to examine a large sample of language, to generate hypothesis about the regularities underlying it, and to test and modify these hypotheses on the basis of feedback that is appropriate to the unspoken rules he happens to be testing. (Smith & Goodman, 1973, p. 180)

The whole word method as used earlier in this century, separated spelling and writing from the reading process. After a child learned to read, then these other subjects were

introduced. A controlled vocabulary was used in the readers, allowing the children to only

read certain words at a particular grade level. In contrast, whole language brings spelling,

writing, and reading together, encouraging children to engage in meaningful activities that

require all of these skills. Goodman (1986) explains the principles of whole language:

> Readers construct meaning during reading. They use their prior learning and
> experience to make sense of the texts. Readers predict, select, confirm, and
> self-correct as they seek to make sense of the text. . . .Basal readers,
> workbooks, skills sequences, and practice materials that fragment the process
> are unacceptable to whole language teachers. . . .Readers are seeking meaning,
> not sounds or words. They may use their developing phonics generalizations
> to help when the going gets tough. If they are lucky enough not to have been
> taught phonics in isolation, with each letter equally important, then they will
> not be diverted from developing the strategies necessary to select just enough
> graphic information to get to the sense they are seeking. . . .Materials for
> instruction must be whole texts that are meaningful and relevant. From the
> first school experiences, they must have all the characteristics of real
> functional language. There is no need for special texts to teach reading or
> writing. . . .The focus is on meaning and not on language itself. (pp. 26, 29, 34,
> 38)

This is reminiscent of the early whole word methods who placed emphasis on the pleasure of

reading and purposeful engagement of the reader with the text. The views of both Goodman

and Smith are similar to Huey's in that reading for meaning and pleasure is one of the most

important aspects of reading instruction. They reject both the whole word approach and

phonics instruction that reduces reading to the learning of separate skills, treating words as

ends in themselves (Feitelson, 1988; Smith & Goodman, 1973).

Although phonics is often introduced as needed in whole language classrooms,

Goodman and Smith reject the idea of breaking the reading process into skills of word analysis

or of comprehension. They believe that the letter-sound correspondences in English are

unreliable. "While [Goodman and Smith] agree that there are patterns in language, they

emphasize that a reader calls upon strategies other than language patterns. They point

especially to the reader's own background of concepts and meaning and advocate that teachers

focus less on word analysis skills (including phonics) and make greater use of reading for

meaning" (Feitelson, 1988, p. 201).

Since 1870, the whole word method in one form or another has remained dominant in

the United States (Feitelson, 1988). Currently, eighty-five percent of the children in our

country are taught using this method of instruction (Groff, 1994a, p.11).

Explicit, Systematic Phonics

The term phonics as used today was coined by Horace Mann to indicate attention to

the sounds of letters within the written word. Mann encouraged children to evaluate the

individual sounds of words they were reading *after* they had learned to read them (Balmuth,

1982). Although Mann was the first to use the word phonics in this sense, as an advocate of

the whole word method, he did not propose it as a means of learning how to read.

This method of teaching beginning reading differs from the alphabetic method in that

attention is placed on the sound of the letters rather than the name of the letters. In phonics,

students are blending sounds; in the alphabetic method they are spelling words using letter

names (Feitelson, 1988). It also differs from whole word approaches in that words are learned

initially through blending the sounds together rather than learned as wholes. Although whole

word approaches may lead a child to induce phonetic relationships, this is done after the child

has read the word and is usually referred to as implicit phonics. Attention may be drawn to a

particular letter-sound pattern within a text with varying degrees of follow-up activities.

Explicit, systematic phonics is a method whereby the student receives direct instruction in letter-sound combinations in a sequential, orderly manner. A student learns the sound of a particular letter or letter combination, and then blends the sounds in a word in sequence in order to pronounce it. The term "decoding" refers to reproducing the sounds of the letters in sequence as they appear in a word. A student can independently learn to pronounce new words as they appear, "a great advantage of the phonic method over the word method" (Huey, 1908, p. 260). The child is taught to hear the sounds and to associate these sounds with the letters of a word. Most of the words students read are those which contain the sounds and letter blends they have mastered.

The use of phonics as a method of teaching reading developed during the nineteenth century and was used more extensively in Europe than in the United States. Farnham (1887), a whole word advocate, reported, "In 1858 the phonetic system was introduced into the schools of Syracuse, NY, and for the time was thought that the true method of teaching children to read had been discovered . . . pupils learned to read by this method in much less time than usual, and attained a high state of excellence in articulation . . . [However, this method was superseded] after a trial of five years [in favor of] the whole word method" (cited in Feitelson, 1988 p. 14). According to Feitelson (1988):

> There can be little doubt that the rising eminence of word and sentence methods were at least partly responsible for the abrupt termination of phonetic teaching . . . one result of the fact that phonetic instruction was by and large superseded in the United States before empirical research on reading got underway is that few modern American researchers or school practitioners ever had an opportunity to observe this approach at first hand . . . Consequently, the functional aspects of the phonetic approach seem to have gone largely unrecognized. (p. 14)

Feitelson (1988) goes on to point out that misconceptions and misunderstandings concerning

the phonetic approach still exist because of the "protracted and tedious exercise in letter

sounding" associated with some of the materials produced. Erroneously, a "decoding

emphasis approach" is usually associated with large quantities of drill that have little

relationship to functional reading (p. 26).

Although the phonetic method was judged successful wherever it was implemented, it

was short-lived (Matthew, 1966). Both whole word readers and phonic readers were

published during this last half of the nineteenth century. The last phonic readers were

published at the end of the 1920's; the first whole word basals were published in 1930.

During a fifty or sixty year period, several teaching variations were developed,

including elaborate systems requiring special letter forms to represent different sounds (Huey,

1908). Just as the whole word method and reading for meaning has had a myriad of variations

during the last two hundred years, phonics has also been approached in many different ways.

During the 1950's and 1960's the debate between the whole word approach and

phonics revived and was often heated and bitter. However, during the last twenty-five years,

research on phonics instruction has brought refinement to the method and a greater

understanding of its place in the teaching of reading. For twenty years, linguists complained

of the inaccuracy of the terminology used for phonics pedagogy, such as the *nk* in *bank* was

erroneously called a digraph. In order to alleviate that problem, publishers hire linguists to

make sure those kinds of errors do not occur (Groff, 1986). Secondly, there is a more realistic

look at how phonics contributes to reading acquisition. "All that phonics can be expected to

do is help children get approximate pronunciations of written words" (Anderson, et al., 1985,

p. 41). Thirdly, recent studies in phonological processing and phonemic awareness have also

shown the value of explicit phonics instruction and its place within reading pedagogy and

purposeful engagement of the reader (Adams, 1988; Ball & Blachman, 1991; Byrne &

Fielding-Barnsley, 1990; Foorman et al., 1996; Grossen, 1997; Stanovich, 1986).

The Issues

Whether teaching a child to read through phonics, spelling, or whole word, one of the

critical issues that has persisted through two centuries is whether or not the child is engaged in

meaningful text or is simply participating in rote drills and exercises apart from actual reading.

A search of history shows that any approach to reading can dissect reading into bits and

pieces, whether it be the alphabetic, phonic, or whole word method. Any approach can be

distorted so the child tediously learns only the pieces without enjoying the whole. At the same

time, all of the approaches have been adapted, at some time, to engage the learner and focus

on the pleasure of reading meaningful text.

Early Spontaneous Readers

After looking at the three basic approaches to teaching reading that have dominated

American education, the question of how best to teach young children to read is not entirely

resolved. However, an examination of how very young children learn to read without

intentional instruction may give further insights.

Some young children, ages two to four years old, learn to read well with relative ease,

but without systematic instruction. Research on this phenomenon has been limited, but that

which has been done points to a natural, sequential, logical, and similar course of development (Anbar, 1984).

The research literature on early spontaneous readers is nonexistent before the research of Durkin in 1958 (1966). She discovered that preschoolers were able to learn to read, and continued to read and achieve at a higher level in subsequent years than their counterparts who did not read until entering school. Her study sparked an interest in environmental factors that contribute to literacy and led to the development of many of the ideas of the whole language movement.

Further research supports the idea that literacy develops as the child is immersed in authentic literature in a literate environment (Barclay, 1995; Cutting, 1991; Kamii, 1991). All forms of language acquisition are not learned simply by observing others, but are constructed in social interaction with the adult. The interaction between adult and child are central to the development of understanding by the child (Teale, 1982; Thomas, 1985). "It is through face-to-face interaction between parent and child that early readers begin to view themselves as part of the reading world and derive meaning from this world in a social context" (Thomas, 1985, p. 470). When children are immersed in literature with continual assistance by adults, literacy skills can develop at a very young age.

An example of high immersion in literacy activities is illustrated in the Japanese culture. Japan which has a complex system of writing has a 99% literacy rate among adults. Sheridan (1982) contributes this to the immersion in literacy from the time children are very young and the emphasis on teaching children to read at a young age. Children read to their mothers twenty minutes a day, and one hour a week is set aside for all the family to read.

Ninety percent of the children own their own books and are read to regularly at home. One half of the publications for children are written for preschoolers. Thirty-one percent of the children read by three years old; eight-three percent read by age five. Only one percent cannot read before entering first grade (Sheridan, 1982).

As children are engaged in literacy, they develop an awareness of print and a deep sense of story (Roskos & Newman, 1994). Before they can even read, they can role play reading with great accuracy. This understanding of the purpose and uses of print helps instill positive attitudes toward reading and brings personal meaning to the reading process. Writing is also a part of written language so the child is allowed to "write" in the way that makes sense to him or her. The understanding of the written language continues to be constructed as children discover that there are differences between written and spoken language (Siegrist, 1991).

The literature also contains a discussion on whether children under six should be taught to read. Some say the process is too difficult because young children cannot make the fine auditory or visual discriminations while others feel that young children can actually learn to read more quickly and with greater ease than older children (O'Donnell, 1979). Cohen (1985) notes that the capacity of very young children is enormous. He maintains they can learn to read as they learn to speak, but both must be linked to meaning.

In research conducted on early readers Cassidy and Vukelich (1980) and Durkin (1966) found that IQ was not a factor in early reading success. In these studies, the IQ of children ranged from 82 to 170. Only 17 to 23% of those with an IQ over 130 read before kindergarten and did not necessarily learn to read quickly even when given instruction. The

enjoyment of literature seemed to be more of a contributing factor than IQ. In a study of young children of varied intellectual ability, Anbar (1984) concluded that early reading ability was not dependent upon intellectual ability but upon other factors.

Although the literature does not deal with this specific issue, there are three studies that give additional insight. Anbar (1984, p. 242) studied six early readers and synthesized the findings into eight possible stages that children may go through in order to acquire reading schools before six years of age:

Stage I: Gaining general awareness about books and print

Stage II: Learning to identify letters and acquire a sight vocabulary

Stage III: Learning the sounds of letters

Stage IV: Putting words together

Stage V: Reading familiar material with the help of parents

Stage VI: Sounding out short unfamiliar words

Stage VII: Reading easy unfamiliar picture books

Stage VIII: Reading for the enjoyment of the content (around 4 years old)

The proposed stages suggest other factors that may encourage reading acquisition. Besides awareness of print, other factors include the ability to identify letters and sounds and to form words using those letters. Although all of the children in this study went through this stage, this phenomenon is not singled out in the discussion.

Lass (1982, 1983) describes how her son Jed learned to read, although she never specifically tried to teach him. She only answered his reading-related questions. She described how Jed progressed from an early awareness of print to collecting and stacking of

books. Then at 27 months, he recognized several letters, acquired a growing sight vocabulary,

pretended to read, learned the sounds of letters, *made words with magnetic letters*, and finally

at the age of 2 years 9 months become a beginning reader, able to read unfamiliar easy picture

books. It is the phenomenon of constructing words from letters that is of interest to this study.

In contrast, Walton (1989) describes her daughter Katy as she learns to read and write.

In her description she does not mention the use of magnetic letters or other tangible

representations of letters as a part of her child's play. At age three and a half the child

distinguishes between letters and words, identifies some letters, finds words in texts that are

interesting, retells stories accurately, makes predications, and "writes" (quotes are Walton's)

grocery lists, stories, and letters using inventive spelling. At age five and a half she is aware

that her attempts to write differ from conventional print. Walton (1986) describes her

daughter's progress in acquiring an understanding of print.

> The words in these pieces have accurate initial and final consonants and more
> often that not, include reasonable medial vowels and consonants. She
> recognizes words in environmental settings and in her books is making
> progress in her ability to use both the context and graphophonic information to
> read. She will spend an hour at a time concentrating on figuring out how to
> read "right" and understand the story. (p. 56)

Katy is not an independent reader at this point.

It is notable that the construction of words precedes reading in the research done by

Lass (1982, 1983) and by Anbar (1984). This appears to be consistent with constructivist

theory which asserts children learn through making sense of their environmental data. In this

case, children take the information of letters and sounds and try to make sense of the

relationship to print. This is in contrast to a traditional phonics approach where children are

taught to "sound" out words. "Sounding out" is a difficult task for many children, probably because they have not made sense of the relationship between the letters and sounds and the words. Both Lass (1982,1983) and Anbar (1984), believe that the "sounding out" of words did not occur until *after* the children could read. It was not a step in beginning reading, but a tool used to help them become independent readers. Perhaps the practice of sounding out words does not make sense to children until they construct their understanding of how words are formed.

The construction of words from letters *before* reading is not only a process absent from traditional phonics instruction, but it is also absent from whole language classrooms. Because there is a realization of the importance of building an enjoyment and understanding of print in general, there can be a lax attitude toward learning the names and sounds of all the letters. If children do learn the names and sounds of the letters incidently in these classrooms, there is not an emphasis on building an understanding of words through creating them. It appears that the early spontaneous readers studied went through a process of reading acquisition that differs somewhat from the sequence of both phonics-based and whole language programs usually designed for children.

In looking at early spontaneous readers, what activities, processes, and events acted as catalysts in the acquisition of reading? How can this information help in the formation of literacy programs for any child learning to read? First of all, the integration of writing, reading, spelling, listening, and speaking was important in the literacy acquisition of these children. Secondly, there was also a purposeful engagement in all aspects of literacy. Thirdly, in looking at the specific activities, it is notable that all of the children who learned to read

early were in engaged in the construction of their own understanding of letters and sounds and the relationship of these sounds to words through the manipulation of magnetic letters or writing of grocery lists. These children did not engage in the decoding of unfamiliar words until they had engaged in spelling activities and could read easy familiar books (Anbar, 1984, 1986; Sporleder, 1995). Ferreiro (1992) makes a distinction between considering the writing system a representation of language or considering it a code. "Children must reconstruct the system of representation if they are to become readers and writers" (Ferreiro, 1992, p. 31). This step of reconstructing the code of representation is usually absent from both traditional phonics instruction and from the whole word approach to reading instruction.

The Orthographic Structure of English

It is remarkable that without intentional instruction very young children can grasp the alphabetic system enough to spell words and learn to read, especially in light of the difficulty of the structure of the English language. English has been considered illogical, a conglomeration of arbitrary spellings. In an attempt to make English a strict phonetic language, Benjamin Franklin, Theodore Roosevelt, the Congress of the United States, and others have espoused spelling reforms to take care of what was seen as a major problem (Balmuth, 1982; Henderson, 1992; Venezky, 1970). The erroneous assumption has been that the system of English is purely alphabetic and therefore irregular (Calfee & Henry, 1996; Henderson, 1992; Henderson & Templeton, 1986; Moran & Calfee, 1993).

The mismatch between the number of sounds and the number of letters in our alphabet is one of the sources of the problem. English has approximately forty-four phonemes, or

sounds, but only twenty-six letters to represent those sounds. Although there are only five

vowels, there are more than twenty vowel sounds. There are not only too few letters for the

sounds, but some of the most important single letters spell two or more entirely different

sounds (Calfee & Henry, 1996; Flesch, 1955; Venezky, 1970).

It is for this reason, both advocates of the whole word method and those who teach

phonics are often overwhelmed by the lack of consistency in English. Horace Mann in

referring to phonics argues that, "In regard to this . . . we think the exceptions exceed the rule,

immensely" (Mann cited in Balmuth, 1982, p. 193). Smith (1988) a leader in the whole

language movement states, "[Phonics] is complicated . . . It is obvious that the most that can

be expected from a knowledge of phonic rules is that they may provide a *clue* to the sound of a

configuration being examined . . . Even if readers do happen to know the 73 rules for the

pronunciation of the six vowels, they would still have no sure way of telling which rule

applies--or even they were not dealing with an exception" (p. 138-139). Those who teach

phonics manage the variations as best as possible. "Given the lack of order and consistent

'rules', the only sensible approach is to train students on specific correspondences, warning

about exceptions" (Moran & Calfee, 1993, p. 210).

Historical Influences

In a detailed analysis of the orthographic structure of English, Venezky (1970)

presents a case for understanding the apparent anomalies of the language. First of all, English

is a language that reflects its history, revealing layers of influence by different cultures. The

base is Anglo-Saxon with a handful of Germanic words for everyday use. Although the

Anglo-Saxon gives the complex and irregular spelling such as *ough*, it is also the foundation

of the simple consonant-vowel-consonant structure of several thousand words (Balmuth,

1982; Calfee & Henry, 1996). On this Anglo-Saxon base is a large layer of Romance words,

residue from two decades of Norman French rule. On top of that, scholars and scientists

imported Latin and Greek.

The combination of these influences brought dilemmas that needed solutions. Anglo-

Saxon differed from the Romance languages in that the spoken language used many more

vowel and consonants sounds, so when the Roman alphabet was adopted, there were not

enough letters to accommodate the spoken language. However, rather than add new letters to

the alphabet, markers like *e* and combinations of letters were used to indicate the changes in

the vowel sounds, such as the long-short vowel contrast with the silent *e* introduced by Caxton

in the 17th century (Moran & Henry, 1996; Venezky, 1970). Henderson (1992) observes "as a

language like English begins to borrow masses of vocabulary from here and from there, then

strict sound representation by letter will inevitably decimate semantic regularities needed for

efficient reading . . . I think modern English is not only spelled as it should be but as it must be

to fulfill its linguistic mission . . . I will argue that English spelling as it stands, though

imperfect, is in Noam Chomsky's terms, nearly optimal " (p. 9, 10, 12). Venezky (1976)

states, "There is a difference between letter-sound regularity and orthographic regularity"

(p.34). Venezky goes on to give the example of the *i* in *business*. From a letter-sound

standpoint and the perspective of phonics conventions, *business* is highly irregular. However,

the sequence of consonants and vowels are very predictable according to orthographic rules

making it orthographically regular.

The Three Levels of the Structure of English

Brady and Shankweiler (1991) identify three levels of language that a reader must penetrate in order to gain understanding. First, morphemes, or meaning bearing units, are the easiest to detect by children, literate, and illiterate adults alike. Syllables are the second easiest, and last of all, phonemes which are the most difficult (Calfee & Henry, 1996; Wagner & Torgesen, 1987).

English is a rich language at the morphemic level. Perhaps the most important point that Venezky (1970) makes is that English is morphographemic, transmitting meaning as well as sound, showing syntactic and semantic relationships and etymological roots. Because of the variation in the different language systems embedded in English, basically a mismatch between the writing system and the speech system, there is a burden for the print to carry meaning as well as sounds. Longer words carry syntactic, semantic, and etymological meaning (Calfee & Henry, 1996). For example, _ly, _ed, _ing, _s are common morphemes that indicate a grammatical change in the word, or in other words carry syntactic information. If English adhered to a rigid one-to-one phonetic representation, there would be a loss of relevant linguistics information. For example, *walked* sounds like *walkt*, but *ed*, a verbal past-time morpheme, gives the reader important information that would be lost if speller reformers had their way (Baker, 1980). Spelling also indicates derivational relationships. For example, although the *g* is pronounced differently in *sign* and *signal* and the *ow* differs in *know* and *knowledge,* retaining a similar spelling gives the reader lexical information that is important. Anglo-Saxon also uses many compound words, showing semantic meaning. "If a word

contains more than six letters, it is probably multimorphemic. Pronunciation, spelling, and meaning all depend on the students' ability to detect the basic elements in these more complex spellings" (Moran & Calfee, 1993, p. 210). Readers need to be able to detect these morphemes.

At the second level, the level of syllables, English is more difficult to grasp. Although English orthography is essentially alphabetic with vowels and consonants providing clues for pronunciation as shown by an extensive evaluation by Hanna and associates (1966), it is not a straight forward representation. Those who point out the irregularity of English are looking on the syllabic level. The letter-sound correspondences are not as direct as they are in other alphabetic languages. "To maintain that English is alphabetic or even morphophonemic does not differentiate it from many other languages" (Calfee & Henry, 1996, p. 56). What then is the difference? DeFrancis (1989) explains Spanish is alphabetic, as is English, but students can learn to read it as a syllabary based on consonant-vowel "chunks" such as ma-me-mi-mo-mu and variations will take the beginning reader a long way. But English cannot be handled efficiently at the syllabic level because the syllabic structure of spoken English is so extensive. According to DeFrancis(1989) there are more than 8000 syllables in the English language, whereas most other alphabetic languages have only 1000 or fewer.

Henderson (1992) stated that in order to learn to read and spell a language well, the learner must "penetrate that language to a depth at which an optimal balance of sound and meaning cues is achieved" (p.12). What, then, is the depth to which English must be learned? Mature readers divide complex words first into morphemic (meaning-bearing units) , then into syllables, and finally into phonemes (letter-sound patterns). English requires analysis at the

phonemic level, a different approach than needed to learn other languages. Therefore,

phonemic awareness is necessary for comprehending the orthography of English (Henderson, 1992).

> English . . . requires readers to grapple with the alphabetic principle at the most fundamental level. Investigations of phonological awareness show that morphemes are most easily identified, next in difficulty are syllables, and toughest are phoneme . . . Some researchers have focused on phonograms (rhyming patterns like *fat, rat)* as the basis for early decoding (Goswami & Bryant, 1990), but the first grader quickly needs access to all of the component phonemes . . . In order to handle even the frequent "regular" word of English . . . young readers must build an appreciate of phonological segments--a 'deep' understanding of consonants and vowels--required by virtually no other written language in the world. (Calfee & Henry, 1996, p. 57)

Liberman battled for the necessity of founding the study of literacy acquisition on the

relationship between the phonemes and the orthography. "Because an alphabet is a cipher on

the phonemes of a language . . . learning to decipher an alphabetically written word . . . would

require an ability to be quite explicit about the phonemic structure of the whole word"

(Liberman cited in Morais, 1991, p. 19).

In summary, in English there is an interaction between the phonological, the

grammatical (syntactic) and the lexical (etymological) systems of orthographic representation

(Baker, 1980). Each of these needs to be understood in order to be a mature and skillful

reader.

Phonological Awareness

For the past two decades, phonological awareness has been the focus of research in early literacy. The three different levels of phonological awareness have been identified: (a) syllables, (b) onset and rime, and (b) phonemes.

Syllables and Onset and Rime

Syllables are the largest segments and pose very little difficulty for most children. (Liberman, Shankweiler, Fischer & Carter, 1974, cited in Goswami & Bryant, 1990). Onset and rime is an intermediate form that is smaller than a syllable and yet consists of two or more phonemes. Children at the beginning stages of reading can break up syllables into onsets and rimes with ease. Goswami and Bryant (1990) suggest that onset and rime is a form of phonological awareness that may help children learn to read and spell. "Tests of children's awareness of [rime and onset] predict reading even after controls for differences in intelligence and social background" (p.94). Juel (1988) cites a strong relation between children's early knowledge of nursery rhymes and the later development of phonological skill, and that phonological skill in turn predicted early reading ability. Whether this is due strictly to the rhyme, some understanding of phonemes, or is due also to early meaningful interaction with an adult in a literacy environment is not known.

Certain tasks may appear to require awareness at the phonemic level, when in fact they do not. For example, rhyming ability is often assumed to require the ability to segment words, but it may actually reflect a nonsegmental level of awareness. Rhyming tasks can be

performed by illiterate poets who have no phonemic awareness (Goswami & Bryant, 1990).

In addition, Bradley and Bryant, (1983) found that children who categorized by rhyming did

no better than those who categorized words by semantic relationship. Also Morais (1991)

points to studies that report failures to demonstrate a significant relationship between rhyme-

based abilities and later reading. However, Bradley and Bryant (1985) observe that the

preliterate development of awareness of rhyme has a direct role in reading and spelling

acquisition. In fact, they attest it is not only a developmental precursor of awareness of

phonemes, but it actually makes an independent contribution to literacy skills. In summary,

rhyming ability is not a task requiring phonemic awareness although it may be a precursor of

that skill.

Another task that does not require phonemic awareness is categorization by initial

consonants. Successful performance does not necessarily reflect phonemic awareness

(Goswami & Bryant, 1990).

Phonemic Awareness

Phonemic awareness, one of the forms of phonological awareness, is the "ability to

recognize that a spoken word consists of a sequence of individual sounds" (Ball & Blachman,

1991). Henderson (1992), Calfee and Henry (1996), and Liberman (cited in Morais, 1991)

assert, with a large body of research to support them, that the English language requires an

understanding at the phonemic levels. One of the most consistent relationships to emerge

from the past decade of research on reading is the relationship between phonemic awareness

and reading acquisition (Spector, 1987). Both correlational and causal studies have been

conducted to indicate that students who enter reading instruction with phonemic awareness are significantly more successful at both reading and spelling than students who are not able to perform phonemic awareness tasks even when intelligence and socio-economic status have been controlled (Adams, 1990; Ball & Blachman, 1991; Bentin & Leshm, 1992; Byrne et al., 1990, 1991, 1993; Bradley & Bryant, 1983, 1985, 1991; Brady & Shankweiler, 1991; Castle et al., 1994; Cataldo & Ellis, 1988, 1990; Cunningham, 1990; Davidson & Jenkins, 1994; Foorman et al., 1991, 1993; Griffith, 1991; Stanovich, 1986; Share & Stanovich, 1995; Stuart & Colheart, 1988; Velluntio & Scanlon, 1987; Wagner & Torgesen, 1987; Yopp, 1988). According to Liberman (cited in Shankweiler, 1991), good and poor readers are distinguished in their performance on tasks requiring phoneme segmentation of spoken words.

> If someone lacks the principle, mere experience with print will not instill the
> ability to read new words. That ability, she[Liberman] insists, is the acid test
> of reading in an alphabetic system . . . the degrees to which phoneme
> awareness exists is the best single predictor of reading success. (Shankweiler,
> 1991, p. xvi)

Blachman (1984), Bradley and Bryant (1985) and Juel (1984) report that success at phonemic tasks is predictive of early reading and spelling success which, in turn, affects later achievement. Juel (1988) found that kindergarten and first graders with poor segmentation skills were likely to be among the poorest readers and spellers. When entering first grade, good readers scored 21.7 on a phonemic awareness test while poor readers scored 4.2. By the end of first grade, good readers scored 37.5 while poor readers still had not reached the entry score of the good readers, obtaining a score of 18.6. By the end of fourth grade, all but four of the good readers remained average or good readers. In addition, the probability that a child would remain a poor reader at the end of fourth grade if the child was a poor reader at the end

of first grade was .88. Lundberg (1984 cited in Juel, 1988) also linked poor readers to poor

entering phonemic awareness. The linguistic awareness of words and phonemes in first grade

correlated .70 with reading achievement in sixth grade. "Many studies in several countries

have shown that skill in entering phonemic awareness has a powerful influence on reading and

spelling acquisition" (Juel, 1988, p. 444). Clay (1979) remarks that many six-year olds who

were not making good progress in reading could not hear the sound sequences in words. She

offers this chilling observation:

> There is an unbounded optimism among teachers that children who are late in
> starting will indeed catch up. Given time, something will happen! In
> particular, there is a belief that the intelligent child who fails to learn to read
> will catch up to his classmates once he has made a start. Do we have any
> evidence of accelerated progress in late starters? There may be isolated
> examples which support this hope, but correlations from a follow-up study of
> 100 children two and three years after school entry lead me to state rather
> dogmatically that where a child stood in relation to his age-mates at the end of
> his first year at school was roughly where one could expect to find him at 7.0
> or 8.0. (p. 13)

Relationship of Phonemic Awareness and Instruction in Letters

Through training studies, it has been observed that instruction in the awareness of the

sounds of speech is not as effective alone as it is in conjunction with instruction in the letter-

sound relationship (Ball & Blachman, 1991; Bradley & Bryant, 1985; Foorman & Francis,

1994; Lundberg et al., 1988; Shankweiler, 1991). Training that includes explicit instruction in

sound-symbol associations have consistently reported positive effects on reading (Shankweiler

1991). In a study done by Bradley and Bryant (1985), children were assigned to one of four

groups: (a) categorization of words according to common sounds such as rhyme and

alliteration, (b) categorization of words according to semantic relationships, (c) categorization

of words according to common sounds and representing them with plastic letters, and (d) a group receiving no intervention. The group categorizing by rhyme and alliteration did somewhat better than those receiving no intervention and those who categorized by semantic relationship. The only significant difference occurred between the group that received sound categorization plus letter training and the untrained control group.

Just as phonemic awareness is not as beneficial without instruction in the letter-sound relationship, so instruction in letter names and sounds alone does not significantly improve segmentation skills, early reading skills, or the spelling skills of kindergarten children (Ball & Blachman, 1991). Ehri and Wilce (1987) found that letter name and letter-sound training without phoneme awareness training was not sufficient to improve the early reading and spelling skills. Children must be aware that words can be broken into phonemes and that each phoneme corresponds to a symbol in our orthography. Stuart and Colheart (1988) found that "children's pre-school phonological state, in conjunction with their letter-sound knowledge, is a significant predictor of reading age even within the first year of schooling" (p. 170). Morais (1991) states that phonemic awareness generally does not develop in the absence of explicit instruction on a graphic code that represents phonemic information. Phonemic awareness develops best when it is connected to instruction in letter names and sounds.

The Place of Spelling in Literacy Acquisition

The body of research on the impact of phonemic awareness and letter-sound knowledge sheds new light on spelling, which is basically visible phonology (Frith, 1980). Henderson (1992) states, "Research of the past two decades has once again placed spelling at

the center of the reading/language arts curriculum. . . .Spelling and word study provide direct teaching of what to attend to in words" (p. 5). What better way to gain an understanding of how speech maps to print than through the process of spelling. This process of moving from phoneme to grapheme enhances a child's conceptual understanding of words and of the reading process (Ball & Blachman, 1991; Stuart & Coltheart, 1989).

During most of this century, spelling has been regarded as a skill separate from reading and taught only *after* the child has learned to read. Reading has been viewed as the primary receptive process on which spelling, the productive process, is based. For this reason, writing and spelling are often de-emphasized until mid-year or later, or until the children supposedly have acquired enough reading skill to support their attempts to write (Morris & Perney, 1984). However, in order to decode words, children must understand the principle that orthographic patterns represent spoken words (Stanovich, 1986). In other words, in order to transcribe grapheme to phoneme, children must understand that the phoneme is represented by the grapheme.

A child does not have to know how to read before beginning this processing of mapping speech to print. Stuart and Colheart (1988) suggest that "the child with good phonemic segmentation skills and good knowledge of letter-sounds can begin to construct an orthographic lexicon without necessarily having any formal experience of printed words. All the child would need is to have an understanding that spoken words can be written down-- without ever having seen it in print" (p. 172). This early awareness of the connection between oral speech and letters has been observed in young children who learn to read without intentional instruction. After some knowledge about print and letter-sound relationships, these

children begin mapping speech to print before knowing how to read. With constructive and caring feedback from adults on the process of spelling words, these children also begin to read (Anbar, 1984, 1986). Durkin (1966) observed that many children write before learning to read. "The ability to read seemed almost like a by-product of [the] ability to print and spell" (p. 137).

Chomsky (1979) also supports the premise that spelling is more accessible to children than reading. First of all, she states, "In a number of ways, spelling appears to precede reading by its very nature. It is primarily a creative endeavor. The inventive spellers compose words according to the way they sound, figuring out for themselves what comes first, next and so on. They do this for their own purposes as a means of self-expression." Secondly, spelling has "a direct relationship to the way words are pronounced . . . translating from pronunciation to print." And thirdly, writing starts with the child, using the message and the words that the child knows. In reading, the child must recognize words chosen by someone else (p. 46).

Montessori (1964) also advocated beginning reading instruction with word composition. She considered this order to be a natural one. "Experience has taught me to distinguish clearly between *writing and reading,* and has shown me that the two acts *are not absolutely contemporaneous.* Contrary to the usually accepted idea, writing *precedes* reading" (p. 296-297).

The Developmental Stages of Spelling and Invented Spelling

The phenomena of writing before reading was researched by Read (1971, 1975). In examining the writings of young children, he observed that pre-schoolers apply tacit

phonological knowledge in a systematic manner in their spellings. The children's omission or substitution of certain letters in their spellings was not random or haphazard, but based on an underlying knowledge of how speech sounds are produced.

From Read's research, attention was drawn to early development of spelling ability and to the knowledge and strategies that children use in beginning reading/writing. When Henderson and his colleagues (1980) applied Read's analytical framework to hundreds of spelling samples of first and second graders, they found the same strategies consistently being used. From this research, stages of spelling development emerged. (Documented in longitudinal studies by Beers & Henderson, cited in Morris & Perney (1984).

The stages of spelling development (see Figure 2) reflect a progression in the awareness of the speech to letter relationship. The child is applying phonological knowledge to the print code, trying to move from phoneme to grapheme. In the first stage, the prephonetic stage, children start to represent speech sounds with letters of the alphabet. Although they may write one letter for a whole word or write only the first and/or last consonant, there is a conscious connection between speech sounds and the letter. In the next stage, the phonetic stage, children employ a fairly reliable use of letter-sound strategy to represent the phonological pattern of the word. First and last letters are usually present, along with a vowel, although the choice of the vowel or vowel spelling may be incorrect. In the third stage, the transitional stage, children use short vowels correctly, use markers for long vowels and are able to form groups of letters. Spelling is nearly correct. In the final stage, correct conventions of spelling are used.

Figure 2: Developmental Stages of Spelling

Developmental Stages of Spelling

Stage 1:   Prephonetic Stage

                Speech sounds represented with letters of the alphabet.
                Use of one letter for a whole word or first and/or last consonant

Stage 2:   Phonetic Stage

                Fairly reliable use of letter-sound strategy to represent the phonological
                pattern of the word.
                First, last letters, and vowel are usually present
                Vowel may be incorrect.

Stage 3:   Transitional Stage

                Short vowels used correctly, use markers for long vowels
                Form groups of letters.
                Spelling is nearly correct.

Stage 4:   Conventional Stage

                Correct conventions of spelling

The stages of spelling reveal the progression of the child's understanding of the

concepts of words that support a his or her ability to both read and to spell (Henderson, 1980).

Because of this, spelling becomes an important diagnostic tool for determining how much

progress the student has made in learning the sound/symbol system and what further

instruction needs to occur. Morais and Perney (1984) suggested that if invented spellings

serve as a "window' into word knowledge, then such spellings analyzed within a

developmental framework could conceivably be used as an indirect measure of current reading

ability and a good predictor of later reading achievement. In a study conducted with first graders, they found that first grade performance on a September spelling test was an effective predictor of end-of year reading achievement. The predictive power of the spelling test increased when readministered in January, producing correlations of .83 with the word recognition test and .74 with MAT total reading core. Correlation between the September and January spelling scores was .81 and .77 to .92 in individual classes. Although there was an overall improvement in spelling performance from September to January, individual students for the most part maintained their performance levels relative to other students. The correlation, however, does not indicate a causal relationship because the development of phonemic awareness may be impacting both spelling and reading (Morais & Perney, 1984).

Although the stages of spelling development give insight into the way children apply phonological knowledge to print, the child does not have to be left without direct instruction (Adams, 1990; Honig, 1996). Feedback should be given to students about the correct spelling of words not yet spelled correctly so that they do not incorrectly learn letter patterns they are trying to assimilate in reading just as the parents of early spontaneous readers do. "By middle to late first grade, words in final drafts should be spelled correctly" (Honig, 1996, p. 92).

The Relationship Between Spelling and Reading

Several studies suggest the value of linking spelling instruction to reading instruction when children first begin to read (Chomsky, 1971, 1979; Ehri & Wilce, 1987; Ellis & Cataldo, 1990; Morris & Perney, 1984; McCulloch ,1996; Uhry, 1993). Spelling has not been shown to increase a student's abililty to decode words, but to increase the awareness of the

phonological structure of words. Hohn and Ehri (1984) found that spelling instruction did not enable kindergarten students to decode nonwords. However, although it has not been shown to improve decoding skills, it is correlated to an improvement in reading. First of all, inventive spellers are providing themselves with excellent and valuable practice in phonetics, word analysis and synthesis, and letter-sound correspondences (Chomsky, 1971, 1979). Very young children can start to make letter combinations and pronounce them when they know only a few consonants and vowels. "Let them make their own productions before they are expected to read other people's productions. This would be true preparation for learning to read" (Chomsky, 1971, p. 49).

A second impact on reading is suggested by Ehri and Wilce (1987). They found that teaching beginning students to produce phonetic spellings (nonwords) improves their ability to read words. Their greater success was *not* because they had learned how to more effectively sound out and blend words. Instead, students appeared better at phonetic cue reading, which entails reading words by remembering associations between letters in spellings and sounds in pronunciation. Ellis and Cataldo (1990) agree that the major contribution of spelling to beginning reading is the promotion of a phonological strategy in reading. Furthermore, Clay (1979) states that spelling may be "a critical precursor the ability to utilize . . . phonics", and that "many children may not need phonic instruction once they acquire and use the sound sequence analysis strategy (p. 66).

A third relationship between spelling and reading is the transfer of knowledge of oral structure of English to the orthography. A child has considerable experience with spoken language and possesses substantial knowledge of the semantic, syntactic, and phonological

identities of individual words. Ehri (1991) suggests that when children make the connection between the spoken word and the written word, the orthographic form of the word is mapped or assimilated to a preexisting knowledge of its semantic, syntactic, and phonological identities. In other words, because the child is making the connection between speech and the print code, there is a transfer of knowledge about the spoken word to the reading process. The child also applies this information to spelling. Children go beyond the simple grapheme-phoneme correspondences and use both syntactic and semantic information very early (Smith, 1980). Plurals and verb endings, although phonologically irregular, are examples of the syntactic and semantic information used by children.

The type of spelling instruction used is important. If children just memorize words or learn irregular spellings of words by rote, it may undermine children's making sense of the alphabetic system and acquiring phonemic segmentation skill from spelling instruction. Also, Juel and Roper/Schneider (1985) found that beginning readers who had been exposed to a mix of high frequencies (nonphonetic) and regular, decodable words in their beginning reading tests were less apt to use their letter-sound knowledge to read words than students who had been exposed to mainly regular, decodable words. The same thing may happen when spelling instruction is not highly phonetic at the outset of learning. Learners may treat spelling as a rote process and may not acquire the phonetic skills needed to benefit their reading. In addition, instruction using the spellings of the phonemes of English rather than individual letters helps students transfer knowledge of the spoken language to the print code. McCullough (1994) suggests that teaching consonant clusters, such as *st, spr, cl*, and *dr,* in

isolation as a separate sound-symbol relationship can be counter-productive, if not confusing to the child, because it hinders the development of that phonological relationship.

A Constructivist Approach

Spelling has traditionally been associated with a "skill and drill" approach with the rote memorization of spelling lists without any connection to reading. In contrast, early spontaneous readers appeared to be actively engaged in constructing their understanding of the structure and concept of word (Anbar, 1984, 1986; Sporleder, 1995). Their understanding was not acquired through passively listening to an adult explain spelling rules or memorization of words, but through informal interaction with others. These children built their knowledge of letter-sound correspondences and of oral language by actively participating in meaningful activities. When spelling a word, they were given as much assistance as needed to spell correctly. Even if the parent had to spell the word for the child, it was at the direction of the child. This latter approach reflects a constructivist theoretical framework for teaching spelling.

Understanding as the Foundation

Understanding is a foundational concept in constructivism. It is a learning theory that asserts, given materials and information with which to work, one constructs his or her own understanding of the world. Information is actively processed into what one has previously come to understand which is often referred to as one's schemata. Learning is an active, internal experience rather than an external, passive reception of knowledge (Clements &

Battista; Kamii, 1991). Piaget states that "children should be able to do their own experimenting. . . .In order for a child to understand something, he must construct it himself, he must re-invent it" (Piaget, 1972, cited in Chomsky 1979, p. 49.)

Spivey (1987) applies this concept of building understanding to reading comprehension, theorizing that readers understand a passage to the degree that they engage in a virtual rewriting of the text (cited in Moran & Calfee, p. 206). In applying this principle to spelling, Chomsky (1979) states:

> The printed word belongs to the spontaneous speller far more directly than to children who have experienced it only ready made. For once you have invented your own spelling system, dealing with the standard system comes easy. A considerable amount of the intellectual work has already been done. (p.49)

Ehri (1987) points out that a student who knows the rule " when two vowels go walking, the second one does the talking" probably cannot apply it when actually reading nor justify the pronunciation of an unknown word because they have not been given opportunity develop their own understanding of these concepts. Moran and Calfee (1992) propose that students engage in a cognitive reconstruction of the print code through spelling words, using their knowledge of letters and sounds. By reconstructing the basic principles, students can understand the structure of language.

Tapping into Prior Knowledge

If learning occurs as new information is actively processed into what one has previously come to understand, then bringing that prior understanding to the surface facilitates the learning process. More important than the particular facts the students knows or does not know is the system of concepts that the student will bring to bear on the topic (Marzano,

1992). Teachers, as they interact with students, are able to discern what each individual student understands or misunderstands.

In applying this principle to literacy, Ehri (1987) reminds us that students possess a considerable amount of knowledge about spoken language and environmental print when they enter school. In the area of spoken language, they understand the semantic, syntactic and phonological identities of individual words. They know that a noun cannot take the place of a verb in a sentence. They understand past, present, and future tense. They have substantial vocabularies, understanding more words than they can say. In the area of environmental print, they may have knowledge of letters and sounds, possess a sight vocabulary, and most certainly recognize logos, such as McDonald's. If a literacy curriculum taps into this prior knowledge, then the printed word, or orthographic form of a word, can be mapped or assimilated to a pre-existing knowledge of its semantic, syntactic, and phonological identities (Ehri, 1987, 1991). By starting with the spoken word, mapping speech to print, a child is guided in using that prior information. This connection is not only helpful in learning to read, but also in comprehending the written word. "No reading occurs, purposeful or purposeless, unless integration is achieved between the oral lexicon and its graphic representation (Henderson, 1992, p. 5).

Social Interaction

Both Piaget and Vygotsky believed that individuals learn by actively constructing their own understanding rather than by passively accepting what is given to them. However, Piaget believed this happened only in interaction with physical objects, while Vygotsky

maintained that social interaction as well as physical manipulation produced this

understanding.

> For Vygotsky, cognitive construction is always *socially mediated;* it is
> influenced by present and past social interactions. The things the teacher
> points out to her student will influence what that student 'constructs.' If one
> teacher points out that the blocks are distinct sizes, that student will construct a
> different concept than the student whose teacher points out the blocks' color.
> The teacher's ideas mediate or influence what and how the child will learn.
> (Bodrova & Leong, 1996, p. 9)

It is not only social interaction with adults that is helpful, but also interaction with peers.

Moran and Calfee (1993) point out that "students are more likely to gain meta-understanding

of a complex system when they engage with one another in the formulation (with guidance) of

practical principles" (p. 208).

Spelling has traditionally been developed around rote memorization of words and

rules with little or no interaction between student and teacher or among students concerning

the concepts behind words. Instead, there needs to be a curriculum that emphasizes purpose,

engagement, and social interaction to undergird all areas of literacy, including comprehension,

decoding, composition, and spelling (Henry, Calfee & LaSalle, 1989; Moran & Calfee, 1993).

The letter-sound system can be understood by young children and social reconstruction is an

effective means of students to acquire these concepts (Moran & Calfee, 1993). "Few children

know what they know about print--or anything else. They lack technical language and

concepts for explaining discourse, words, or print. Yet they manage quite well" (Moran &

Calfee, 1993, p. 207). However, they can engage in social interaction that develops this

knowledge about the concepts of print, sharing the concepts and technical terms.

The Place of Content

Although personal construction of understanding in a social context is at the core of

constructivist theory, it does not preclude learning without specific content. Elkonin (1971,

1977) distinguishes between play and a learning activity. "A learning activity is adult-guided

activities around specific content that is formalized, structured, and culturally determined. .

.the content is presented not as a series of interesting facts, but as a discipline with its own

logical structure and vocabulary" (cited in Bodrova & Leong, 1996, p. 60). The social context

must convey a set of expectations relevant to the essence of the learning activity. If a teacher

declares a child's work to be acceptable, when in fact, the child has many errors, the child may

not develop an interest in learning. Bodrova and Leong (1996) state that Vygotskians goes so

far as to attribute the lack of intrinsic motivation to a lack of conveying and adhering to the

set of expectations inherent in a particular discipline.

In applying this principle to the acquisition of literacy, it is important that language

instruction is not incidental, but that it deliberately conveys the logical structure and

vocabulary of the discipline. Moran and Calfee (1993) suggest engaging students in the

organized reconstruction of the orthographic system using structured instruction. Instead of a

curriculum that focuses on incidental encounters with print, they propose a curriculum that

progresses in a manner that considers the developmental stages of children and yet

communicates an understanding of the history and orthography of the English language. The

expectations of specific content are present along with the opportunity for social interaction

and active engagement of the student. Ferreiro (1992) points out that traditionally literacy

either focuses on the teacher and method or on the maturity and readiness of the child. In most

cases, instruction has not taken into account the nature of the body of knowledge. A focus must include not only consideration for the teacher and the student, but also for the content. Knowledge is a system of relationships, and as such, knowing the structure of a discipline helps the student organize knowledge and interpret new information.

Calfee and associates (1995) conducted a study using a curriculum that systematically presents the short vowels and consonants, followed by the long vowels and consonant digraphs, such as *th, ch, sh,* and then by consonant blends. Using this knowledge base, teachers wrote words that children constructed words. Wong (1986) conducted a study to investigate the efficacy of improving spelling by concurrently teaching structural word analysis and a self-questioning strategy. The spelling words were read aloud, followed by a discussion of the meanings of the words. Then the students broke the word into syllables, using a self-questioning technique to develop an understanding of the word. Wong concluded that "effective spelling instruction appears to contain two components: knowledge of phonics and/or the linguistic structure of words and knowledge of spelling strategies" (p. 172). Both Calfee and Wong based their studies on the system of knowledge inherent in the discipline, yet implemented a constructivist approach to teaching.

A Supportive Social Environment

In Russian and Hebrew there is one word that describes both a learner's learning and a teacher's teaching. The Russian word *obuchenyie* and the Hebrew word *lâmad* are words which recognize the active contribution of both learner and teacher in one act. In Western culture, the two ideas are separated, leaving room to assume that the teacher is active while the

child is passive, or that the child is active while the teacher stands back and allows the child to

construct understanding without guidance. However, an approach which values the active

participation of both the learner and the teacher enhances the construction of understanding.

Vygotsky develops this idea of active participation by both learner and teacher,

describing the kind of interaction which is helpful. The *zone of approximal development*, one

of Vygotsky's most well-known ideas, is a framework that helps the teacher judge what kind

of support is needed by the child. At the lower level of the zone is what the child knows and

can do alone. It is what the learner can perform independently of any help. At the higher level

of the zone is the maximum the child can perform with assistance from an adult or peer. This

help may include hints, clues, rephrasing, demonstrating, or asking the child to restate what

she or he understands. What a child does with some assistance today may be done alone

tomorrow.

Realizing that there are different levels of performance and that these levels are natural

and acceptable can help the teacher monitor the type of assistance needed. It also allows a

broader perspective on assessment because the teacher is not just interested in what a child can

do independently but what he or she can do with assistance. Assessment is ongoing with

feedback given to the child. The teacher interacts with the child to know how the child is

thinking, what the child understands and what the child does not understand. If the child

knows how to perform the task, then adequate practice is given so the child can become fluent

in the skill or concept. If the child cannot perform the task even with assistance, then the

teacher knows the task is not developmentally appropriate at that time. Wood, Bruner, and

Ross (1976) suggest that *scaffolding* be provided within the zone of proximal development in

order to increase the performance level of the learner. The task is not changed nor made easier, but what the learner initially does is made easier with assistance. The teacher may perform the task with the learner, giving as much assistance as needed to make the child successful at the task. Within that framework, the amount of assistance is varied as the child progresses.

Gal'perin 1959/1969 (cited in Bodrova & Leong, 1996) suggests the use of *mediators* to support the child's learning. He maintains that before a concept, skill or strategy is internalized, it exists for a period in an externally supported form. During this time, the teacher has opportunity to guide the development of a skill or concept by modifying the external support given. Once the concept or skill is internalized, it becomes "automated and folded" and is not easily accessible to correction. The teacher has difficulty correcting a missing or defective part because the behavior is automatic and is not noticed until the act is already completed. This is why, according to Gal'perin it is difficult to correct things one has initially learned incorrectly, even when it is known to be wrong. Pointing out the error after it has been committed does not correct the problem, but merely identifies it.

Gal'perin 1959/1969 (cited in Bodrova & Leong, 1996) designed a method of errorless learning to help teachers prevent and/or correct repeated errors. If the teacher keeps in mind the past or potential mistakes of the child when planning, then the child can be helped to think through the concept, skill or strategy. In addition, the teacher can devise ways to mediate the learning before the mistake is made by using objects, phrases, or other concrete means to guide the child's thinking. For example, if young children have difficulty telling the color orange from the color red, the use of an apple or an orange can help mediate the learning

of the children. This can be done to prevent a mistake before the child has had opportunity to become confused.

Moran and Calfee (1993) suggest the development of a curriculum that applies social interaction to spelling and the acquisition of word knowledge. In a supportive social environment, students build words and talk about each part of the word, what sound is used, what letter is used, and why. Students are given all the assistance and time needed to form the concepts needed for the English language.

The Curriculum

Using a constructivist approach, the curriculum is built around primary concepts rather than around detailed bits and pieces. It is a quest for essence because once the whole is learned, then the parts begin to make sense. The student is developing frameworks rather than memorizing isolated facts. In contrast, a reductionist approach is to teach every little part, hoping that the whole will eventually be identified.

Siegriest (1991) recognizes the need for students to discover the relationship between phonemes and graphemes and articulate the organizational principles. Calfee and Henry (1996) stress the need for a program which encourages students to make connections that help to make sense of the system. Rather than focusing on a single letter-sound objective as found in traditional phonics or spelling programs, students are encouraged to discover the large concept. The emphasis is on dialogue, understanding, explanations, and building words rather than on recitations, worksheets, and copying. Calfee and Moran (1993) talk about the spelling-decoding curriculum designed by Calfee and associates at Stanford University.

> The Anglo-Saxon single-consonant system is relatively simple both
> phonologically and orthographically. It has a well-defined structure with
> considerable regularity. Because it is the foundation of our language, it
> becomes a good foundation for talking about the print code. In order to
> indicate the additional vowel sounds of the Anglo-Saxon language, an e was
> added to the end of the words to mark a long sound. For example, *tap* is a
> regular consonant-vowel-consonant form of the Anglo-Saxon language.
> However, in order to indicate a change in the vowel sound, a *e* is added to the
> word to form *tape*. In fact, when students learn the five short vowel sounds
> along with fifteen of the most productive consonants, over 1,000 words can be
> spelled and read. It also supports the early stages of "invented spelling."
> (Moran & Calfee, 1993, p.54)

The purpose is to provide students an opportunity to develop their understanding of the

structure of English in an interactive environment in the framework of primary concepts.

Honig (1996) also suggests engaging the student in meaningful activities as a

means of instruction in the letter-sound correspondences of our language.

> Phonemic awareness, phonics, and decoding should be taught in a dynamic,
> thinking manner so that students come to understand the alphabetic principle
> and the system of symbol/sound correspondences and how to consciously
> figure out new words. Programs should provide materials and activities that
> give students enough practice so that the particular skill being taught becomes
> second nature. Programs also should provide opportunities to develop and use
> these skills by having students read text with and without the teacher. (p. 130)

The purpose of this study was to determine if actively engaging students in the

construction of the print code would aid children in understanding the alphabetic principle and

in turn impact reading and spelling achievement. It differs from previous studies conducted by

Ehri and Wilce (1987) and Moran and Calfee (1996) in that children are learning correct

spellings as they move from phoneme to grapheme rather than writing nonwords.

CHAPTER 3

METHOD AND PROCEDURE

Conceptual Framework

A quasi-experimental research design was used to compare three different approaches to teaching letter-sound correspondences and spelling in the first grade. The following four areas of investigation were pulled together and applied to produce this curriculum: (a) phonological processing, and in particular phonemic awareness as a predictor of reading and spelling achievement, (b) the structure of English orthography, (c) the stages of reading acquisition by early spontaneous readers, and (d) constructivism as described by Piaget and Vygotsky.

First of all, the large body of research on phonological processing has shown that the level of phonemic awareness a student has entering first grade is predictive of reading and spelling achievement at the end of first grade as well as in later grades. In addition, the ability to process letters and letter patterns critically effects the efficiency and fluency in early reading (Adams, 1990; Foorman, 1996; Share & Stanovich, 1995).

Secondly, the structure of English as described by Venezky (1970) gives insight into the regularity and organization of the language. The print code becomes a text in its own right to be understood and applied. Activities which require the spelling of words before reading

them helps students to think about the letters and letter patterns of words and to construct

their own understanding of written language, reinforcing and refining orthographic processing.

Thirdly, in the study of early spontaneous readers by Anbar (1984, 1986), young

children chose on their own to engage in encoding activities before reading. In these cases, the

process of spelling before reading appeared to solidify the connection between sound and print

(phonological processing) and to help students construct their own understanding of the use of

letters and letter patterns in words. Knowledge of this "natural" process of reading can provide

insight into new strategies for teaching children to read.

Finally, Vygotsky describes the use of social interaction in a supportive environment.

Scaffolding and the use of external mediators help a child move from assisted learning to

independent learning. In addition, both Vygotsky and Piaget propose that an interactive

approach to learning rather than rote memorization or "skill and drill" helps students construct

their own understanding of the concepts and materials presented. Students are given the

opportunity to connect their prior knowledge of oral language, such as syntax and vocabulary,

with written language. Through active construction of the print code, students begin to

construct an understanding of the language, seeing the larger concepts rather than just bits and

pieces.

Description of Population

The population for this study involved all nine of the first-grade classrooms in a school

district located in a town of about 5,000 people in southwestern Montana. The community is

predominately white with light industry and manufacturing, agriculture, and small business

enterprises contributing to the local economy. It is situated within ten miles of a state university in an area in which the population continues to grow. The school district has approximately 2,000 students enrolled in kindergarten through grade twelve. All of the first-grade classrooms of this community are located within one elementary building. There are about 165 first-grade students apportioned to nine classrooms.

All first-grade teachers have the same curriculum guide for reading provided by the local school district and are supplied with the identical reading program, *The Road to Independent Reading,* Macmillian/McGraw-Hill, 1997. The series was used for the first time during this current school year, so all of the first grade teachers were teaching it for the first time.

<center>Sampling Procedures</center>

The school district was chosen because it is within reasonable proximity of the researcher and the administration was interested and supportive of the research. The total initial population of one hundred sixty-five first-grade students in nine classrooms was used in the research. Since this given population would require a sample size of one hundred twenty-two students, using fourteen students per classroom instead of eighteen or nineteen, the total population was used rather than just a sample of it.

Children who did not attend school the first two days of the school year were not included in this study. Seven children receiving special services in the resource room and three children who were retained were also excluded from the study. Also, during the course of the twenty-one weeks, nine children moved from the district and one child was placed in

kindergarten. This left a total of one hundred forty-one students that participated in the study for the full twenty-one weeks. Students who could read entering first grade and students who received special services through Title 1 were identified so a separate analysis could be implemented for their scores. See Appendix B for a complete description of the population.

Intact classrooms were used for this study since the researcher had no control over the placement of students in a particular classroom. The principal assigned students based on report from the kindergarten teachers, placing an equal number of high, medium, and low ability students in each classroom. There were also an equal number of students with special needs placed in each classroom. See Appendix C for the plan of assignment of students to each classroom.

The teachers of each treatment group had a comparable amount of teaching experience and education. See Appendix D for a complete description of the educational background and teaching experience of the teachers. All of the nine teachers in this study had at least a bachelor's degree plus fifteen credits. Two teachers in the control group had at least a master's degree. All teachers had over six years of experience in the classroom with two teachers in each group having more than eleven years of experience teaching at the elementary level. Two teachers in each group had over six years of teaching at first grade and one teacher in each group had one to five years of teaching at first grade.

One teacher in the control group had a medical emergency during the second week of the study and was absent for sixteen of the twenty-one weeks. The substitute teacher was an experienced teacher with an equivalent amount of teaching experience and education as the regular teacher. Since the basal reading series was newly adopted, all nine regular classroom

teachers and the substitute had no previous experience teaching the curriculum. Also, one

teacher in the Experimental B group was absent frequently in January due to illness which

resulted in her classroom finishing Lesson 57 rather than Lesson 68 in Word Workshop at the

end of the study.

<div align="center">Description of Treatments</div>

In this study there were three treatments referred to as experimental group A,

experimental group B, and the control group. Each group was comprised of three classrooms

of approximately seventeen students with a total of fifty students in experimental group A,

forty-one students in experimental group B, and fifty students in the control group. Initial

pretests were conducted the second and third day of school. Instruction in reading using the

basal, phonics program, and/or spelling before reading began on the fourth day of the school

year and ran a total of twenty-one weeks.

Figure 3. Contrast of the Three Treatment Groups

Control Group n = 50	Experimental Group A n = 50	Experimental Group B n = 41
Basal Program	*SRA Phonics*	*Word Building*
Basal program Skills taught in context Contextual phonics using onset and rime	Basal program Skills taught in context SRA phonics using decoding	Basal program Skills taught in context Word building program

All the children in the nine classrooms received instruction in reading following the district curriculum guidelines and using the Macmillian/McGraw-Hill reading program supplied by the local school district (see Figure 3). This basal series is a literature-based program with a wide variety of opportunities to read, write, and talk about meaning. Shared reading of Big Books, guided reading in individual books, and independent reading in a variety of books within the classroom library provide many opportunities to interact with print. Skills are taught in context using the reading selection. For example, if students are learning about questions marks, those are pointed out and discussed within the context of their reading material.

In addition to the basic reading program, children in the control group were introduced to phonics within the context of the literature. Students were directed to listen and observe certain letters and letter combinations within a particular text. The spelling component of the curriculum provided a weekly list of spelling words that contained the same rime. Activities included worksheets as well as some manipulation of onset and rime. For example, students were asked to make words that end in _ime, such as *dime, time*, and *lime*.

Experimental group A used the regular basal series for reading, skills in context, and spelling as described in the control group. In addition, however, these children received direct instruction in phonics using a traditional approach of learning letter sounds and then blending them into words and nonwords. Students moved from grapheme to phoneme, or in other words, from the printed word to the oral word. These words were then used to read controlled texts.

Experimental group B used the basal series for reading and skills in context. However, these children did not use the phonics and spelling components of the program. Instead, students learned the letter representations of sounds and engaged in word building activities, moving from phoneme to grapheme, or in other words, from the oral word to the printed word. The purpose was to engage students in the organized reconstruction of the orthographic system.

Teacher Training

Before implementing the study, the researcher met with the nine first-grade teachers to discuss the structure of the research project, the tests that would be used, and the controls developed in order to ensure a valid study. Issues of contamination of the programs were thoroughly discussed. Although six teachers did not have to implement changes in their teaching approach, their classrooms were involved in testing. All teachers kept weekly notes on their lessons and recorded the amount of time spent in reading and writing instruction. This was monitored to ensure that all groups received the same amount of time in instruction.

In addition, a four-hour workshop was presented to the three teachers conducting the treatment over a two-day period. (See Appendix E). The research and background for word-building was discussed with the teachers in an interactive format. Materials and activities were also taught and practiced. All the materials as well as the opportunity to practice necessary were provided by the researcher during this time.

In addition to the training of the teachers using the treatment, an additional one hour meeting was held after two weeks of instruction to adjust lesson plans and discuss any

problems. Weekly one-on-one contact with these teachers was made to give them the needed

support and to discuss any problems that might arise.

Parental Notification

Parents were informed of the testing through a personal letter sent out by the principal

of the elementary school. They were given opportunity to ask questions or seek more

information. Since no individual scores were used for diagnosis, written permission as such is

not required. A copy of the letter is presented in Appendix F.

Methods of Data Collection

The following data was collected on each child in the experimental and control

groups:

1.   Gender

2.   Birth date in order to determine age by year and month

3.   Socio-economic status determined by free or reduced lunches

4.   Pre and post test of recognition of alphabet letters through flash cards

        (receptive)

5.   Pre and post test of dictation of alphabet letters (productive)

6   An informal reading inventory

7.   Pre and post test scores on the Yopp/Singer Test of Phoneme Segmentation

8.   Pre and post test scores on a development spelling test developed by Morris

        and Perney (1984)

9.   Test of naming the sound that goes with a letter at the end of the experiment.

10.   Word Identification, Word Attack, and Passage Comprehension Tests of the

Woodcock Reading Mastery Test-Revised (1987) at the end of the

experiment.

Gender, Age, and Socio-economic Status

Gender and birth date were secured from school records before the study began. The

birth date enabled the researcher to divide the children into three age groups at the conclusion

of the study: (a) 6.5 to 7.0, (b) 7.1 to 7.6, and (c) 7.6 and older. Information on socio-

economic status was determined by free or reduced lunches and was secured at the conclusion

of the study. Using this information, students were divided into high and low socio-economic

groups. All the pretests were administered the second and third day of school; the posttests

were administered after the twenty-one weeks of instruction.

Letter Recognition, Letter Sounds, and Letter Writing

Students were individually tested on recognition of the alphabet letters through use of

flash cards with the letters in random order as specified by the record sheet. Scores were

recorded as the number correct. At the end of the study, students were not only asked to name

the letter, but to give the sound of the letter. The children were also asked to write both the

capital and small letters of the alphabet in a group setting as the teacher dictated letters.

Scores were recorded as the number correct. These tests of the alphabetic letters were

implemented because of the research findings that knowledge of letters and associating them

with sounds produces higher achievement in first-grade children (Ball & Blachman, 1991;

Bradley & Bryant, 1985; Foorman & Francis, 1994; Lundberg et al., 1988; Shankweiler,

1991).

Informal Reading Inventory

An informal reading inventory, *Reading Competency Test* (National Right To Read

Foundation, 1997) was individually administered before the study began in order to screen for

children who could already read. In the analysis of the data, children who could read before

the study began were separated from the nonreaders.

Yopp/Singer Test of Phoneme Segmentation

The Yopp/Singer Test of Phoneme Segmentation was used to assess incoming

phonemic awareness, to assess the progress at the end of the study, and as a covariate. For this

reason, the initial test was conducted before the study began. Testing was done by the

researcher and eight other testers. Although the testing does not require personal judgment,

takes only six to ten minutes to administer, and is relatively easy to administer, training in the

administration of the test was conducted before the actual testing in the fall and at the end of

twenty-one weeks to secure reliability among the testers.

The Yopp/Singer test of phonemic awareness was chosen because in a study of ten

phonemic awareness tests, the Yopp/Singer had the highest predictive validity with a

correlation coefficient of .72 and the highest reliability coefficient of .95. In a study of the ten

tests, the construct validity of the concept of a causal link between phonemic awareness and

reading acquisition was supported by the predictive validity (Yopp, 1988).

Developmental Spelling Test

The developmental spelling test developed by Morris and Perney (1984) was used to

assess incoming phonemic awareness and orthographic awareness, to assess the progress at

the end of the study, and as a covariate. The initial test was administered before the study

began by each individual classroom teacher.

This 18-word test was developed by Morris and Perney (1984) using the research of

Read (1975) and Henderson and Beers (1980). Read, Henderson, and Beers found that the

front vowels *a, e,* and *I,* produced the most frequent and consistent categorization of strategies

in children's invented spellings. It was on this basis that the test includes three short *a,* three

long *a,* three short *e,* three long *e,* three short *i,* and three long *i* words. See Appendix G for a

copy of the test.

The test was also based upon studies conducted by Liberman and Shankweiler which

substantiate a significant relationship between phoneme awareness and first-grade reading

achievement (Helfgott, 1976; Liberman, 1973; Liberman, Shankweiler, Fischer & Carter,

1974). Studies showed correlations of .65 to .74 between first-graders phonemic spelling

ability and their performance on a structured phoneme segmentation test (Liberman et al.,

1974). Tangel (1995) also studied the relationship between phoneme awareness and

developmental spelling. In addition, other researchers have described in detail how children

who spontaneously engage in invented spellings were likely to become better readers

(Bradley, 1988; Bryant & Bradley, 1980; Chomsky, 1971, 1979; Ehri, 1989; Read, 1971,

1981). The developmental spelling test requires phonemic awareness and tests the ability of

the student to map speech to print and is intended to be used to predict reading achievement

In studies done by Morris and Perney, correlations of .69 to .78 were found between a September spelling test and reading achievement. A January spelling test gave correlations of .74 to .82. The January spelling performance accounted for more than two-thirds of the variance in the children's end-of-year word recognition ability. The correlation between the September and January spelling scores was .81, with the individual class correlations ranging from .77 to .92. Although there was an overall improvement in spelling performance from September to January, individual students for the most part maintained their performance levels relative to other students in the sample, giving evidence for reliability over time of the developmental spelling test.

In order to demonstrate the internal consistency of the test, a split-half reliability coefficient was calculated on the administrations of this test (Gay, 1987). The split-half reliability coefficient was .93 on the first administration of this test to the first-graders at the beginning of the school year and a .86 on the final administration of the test at the end of the study.

Scoring of the test was done by the researcher and was based on developmental spelling levels with a range of 0 to 5 points given for each word (see Figure 4). Strict criteria for allowable letter sequences within the spelling attempts is essential in order to make the scoring system reliable. For this study, the researcher developed a list of all spellings so all the tests would be scored consistently (See Appendix H).

Figure 4. Scoring System for the Developmental Spelling Test

	Scoring the Developmental Spelling Test
0 points	Random string or when the spelling has an inappropriate beginning consonant
1 point	Only the beginning consonant is represented correctly
2 points	Beginning and ending consonants are represented correctly or the beginning consonant and the vowel are represented correctly
3 points	Consonants and vowels are represented but some are represented by the correct letter *name,* such as *mail* = MAL
4 points	All consonants and vowels are represented correctly
5 points	Correct spelling

Woodcock Reading Mastery Tests-Revised

The Word Identification, Word Attack, and Passage Comprehension subtests of the

Woodcock Reading Mastery Tests-Revised (Woodcock, Mather, & Barnes, 1987) was used

at the end of the study to measure reading achievement. In addition to the individual scores on

each of these tests, the Word Identification plus the Word Attack give a composite score of

Basic Reading Skills. The composite score of the Word Identification and Passage

Comprehension give a Short Scale Score of overall reading ability. Although the test is

individually administered, the publisher has established basal and ceiling levels for each

subtest in order to minimize the testing time to approximately five minutes per subtest. The

test was administered by the researcher and eight selected testers who were trained using the

training program of the Woodcock Reading Mastery Examiner's Manual in order to secure

reliability among the testers.

The WRMT-R is useful for educational research because it is a predictor and/or

criterion measure of many kinds of studies investigating a variety of experimental effects. As

stated in the Examiner's Manual for the WRMT-R (1987),

> The potential research function of WRMT-R are extensive. The WRMT-R
> tests can be used for criterion measures in studies investigating a variety of
> experimental effects, for example, the short-or long-term effects of educational
> treatment . . . The WRMT-R is also useful describing the reading-achievement
> characteristics of subjects included in a sample or experimental condition.
> (p. 10)

Although the testing time per subject is greater than that needed for group testing, the

researcher has more control over the quality of data obtained (Woodcock et. al., 1987). The

test is unusual in that it reports scores on a continuum rather than interpolated on the basis of

data gathered in the fall and spring, giving norms based on chronological age or grade level to

the tenth of a year. This gives more exact data for researchers.

The test was normed using data collected from a stratified random sample of 6,089

subjects in 60 geographically diverse U.S. communities. The kindergarten through twelfth-

grade sample was composed of 4,201 subjects. The norming procedures included using a

wide variety of randomly stratified variables such as census region, community size, sex, and

race. Data was gathered continuously throughout two complete school years facilitating the

development of continuous-year norms rather than just fall, mid-year, and spring norms.

Corrected split-half, internal consistency reliability coefficients were reported for each separate grade for each subtest. The coefficients for the three subtests used in this study were .94 to .98. Content validity of the Woodcock Reading Master Tests-R is based on expert opinion for the selection of items (Woodcock, et al., 1987). Concurrent validity, the relative effectiveness of a test in assessing a subject's behavior when compared with an independent criterion measure, was investigated across different age levels and with different anchor measures.

The Woodcock Reading Mastery Tests-Revised is a "reliable instrument useful in measuring some aspects of the reading process" (Cooter, 1987, p. 913).

Research Design

This quasi-experimental study was conducted in a nearby school district utilizing volunteer teachers with intact classrooms. There were three first-grade classrooms in each of the two experimental groups and three in the control group, making a total of nine first-grade classrooms participating in the study. Because neither the random selection of teachers nor the assignment of subjects to groups was possible, the equivalency in variables other than the treatment of the experimental and control groups cannot be assumed.

Sampling Bias

Sampling bias is not the differences between the sample and the population due to chance, but is a result of the research design (Gay, 1987, p. 115). In this study, volunteers and intact groups are two sources of sampling bias that must be addressed.

Volunteers may provide a major source of sampling bias since "volunteers are bound to be different from nonvolunteers. For example, they may be more motivated in general or more interested in the particular study" (Gay, 1987, p.116). Although there was a random assignment to experimental and control groups, this study can only be generalizable to the population of volunteers and their classrooms.

Another source of sampling bias is working with intact first-grade classrooms. In this study, the school district has already randomly assigned students to classrooms. However, although equal numbers of high, medium, and low achieving and equal numbers of special needs students were assigned to each classroom, homogeneity could not be assumed. Since the homogeneity of the groups could not be guaranteed, additional steps were taken in the data analysis to consider initial difference in the subjects assigned to each group and to statistically equate them through Analysis of Covariance. The developmental spelling test score and phonemic awareness score were used as independent covariates to equalize the groups. Gender, age, and the socio-economic status were also statistically taken into account.

Controls over Threats to Internal Validity

In order to attribute differences in reading achievement to the treatment, extraneous variables that may threaten the internal and external validity of the study had to be controlled (Gay, 1987). Attention was given to extraneous variables that would threaten the validity of the study in order for a research study to adequately answer the questions posed. Campbell and Stanley identified threats to the internal validity of research study (cited in Gay, p. 268-276) which are addressed for this research project.

First, control over the introduction of extraneous materials or methods of teaching were required in order to attribute the results to the method of teaching reading. All the teachers were guided by the curriculum guide for first-grade reading and provided with the same reading program, *The Road to Independent Reading*, Macmillian/McGraw-Hill, 1997. In addition, teachers in experimental group B participated in a three-hour workshop where they became knowledgeable in the research basis of the study and became familiar with the curriculum materials used in the word building lessons for the twenty-one week period. Materials, methods, length of time, and time of day were synchronized in order to attain equivalency in the general approach to teaching reading as well as the treatment. Additional on-site discussions with the teachers occurred during the twenty-one week period in order to ensure compliance with the teaching strategies and methods developed. The teachers also keep brief records of their progress through the curriculum.

There was also the threat of contamination through compensatory equalization, compensatory rivalry, and resentful demoralization due to the interaction among the teachers (Kerlinger, 1973). The treatments could have been diluted through the equalization of methods used, producing contamination of the control group. Compensatory rivalry or resentful demoralization occurs when one group perceives that one treatment is less desirable than another. Since all nine teachers are working within one school, in order to control that threat to validity, the researcher carefully instructed the three teachers conducting the experiment in the importance of refraining from discussions of the treatment with the other six teachers.

Another potential threat to the internal validity of the study was the selection of a poor instrument to measure the results of the study. For that reason, the three subtests of the Woodcock Reading Mastery Tests-Revised were selected to test reading achievement at the end of the twenty-one weeks. Although this test requires individual administration and therefore the training of ten testers, it produced a more accurate measure of reading achievement than a group administered reading test. In a study conducted by Amoriell (1981), four standardized achievements tests were administered to measure reading achievement of third graders. The results revealed significant discrepancies across different tests, with 70 percent of the children receiving grade scores ranging over more than one year. The results of the study did not support the use of standardized test scores as adequate measures of reading achievement.

Threats of history and maturation were minimized through the experimental/control design using nine different classrooms in three different treatment groups. Regression effect was also controlled through the experimental/control design. Also, students who score 2.5 standard deviations above and below the mean in Basic Reading Skills and those who repeated first grade were excluded from the study.

In order to diminish the effects of the presence of the researcher in the classroom with the students, the researcher visited the classrooms both before and during the study.

Analysis of Data

A two-factor analysis of covariance with two covariates was used to analyze the data. According to Kerlinger (1973, p.370), "analysis of covariance is a form of analysis of variance

that tests the significance of the differences between the means of final experimental data by taking into account the correlation between the dependent variable and one or more covariates, and by adjusting initial mean differences in the experimental group." In other words, the analysis of covariance can be used to adjust for initial differences among the groups on the variables of interest, which are called covariates. Since phonemic awareness was identified through the literature review as a variable that is highly related to reading, the Yopp/Singer Test of Phoneme Segmentation and the developmental spelling test (Morris & Perney, 1984) were used as covariates. The independent variables of this study were gender, socio-economic status, entry level of phonemic awareness, and the methods of teaching spelling. The dependent variables were reading achievement, spelling development, and phonemic awareness levels. The analysis of covariance tells what the mean of the dependent variables would look like if the groups had started out with the same mean on the phonemic awareness.

Although the best method of guarding against non-equal groups is through random selection and assignment, this statistic can be used with caution to equalize intact groups on selected variables that are related to the independent variable. Kerlinger (1973) and Popham and Sirotnik (1992) suggest the use of the analysis of covariance in educational research when the subjects cannot be matched or assigned at random. However, it cannot be used to equalize groups on all variables and is not a substitute for random sampling. The analysis of covariance assumes homogeneity of the variances, random sampling, normal distributions, and the slopes for the regression lines must be equal.

The statistical data was analyzed by the MSUSTAT Statistical Analysis Package Version 5.25 developed by Dr. Richard E. Lund, Montana State University, Bozeman, Montana 59717.

Choice of Alpha

The most commonly used levels of significance (alpha) in educational research are .05 and .01 (Gay 1987, p. 384). The decision is determined by the potential consequences of committing a Type I or a Type II error. A Type I error is rejecting a null that is, in fact, true; a Type II error is retaining a null that is, in fact, false. In this study the larger alpha of .05 has been chosen because the probability of a Type II error could result in a decision not to use a method that would, in fact, benefit students. A Type I error is of less concern because the cost and time requirements of the method are minimal to teachers and the school district. For these reasons, an alpha of .05 is reasonable.

Statistical Hypotheses

1. There is no significant interaction of age and method on the adjusted means of phonemic awareness.

2. There is no significant interaction of gender and method on the adjusted means of phonemic awareness.

3. There is no significant interaction of socio-economic status and method on the adjusted means of phonemic awareness.

4.   There is no significant difference in the adjusted means of phonemic awareness among the treatment groups.

5.   There is no significant difference in the adjusted means of phonemic awareness of all males and the adjusted mean of all females.

6.   There is no significant difference in the adjusted means of phonemic awareness levels between the high and low socio-economic status.

7.   There is no significant interaction of entry phonemic awareness level and method with phonemic awareness.

8.   There is no significant interaction of age and method on the adjusted means of reading achievement.

9.   There is no significant interaction of gender and method on the adjusted means of reading achievement.

10.   There is no significant interaction of socio-economic status and method on the adjusted means of reading achievement.

11.   There is no significant difference in the adjusted means of reading achievement among the treatment groups.

12.   There is no significant difference in the adjusted means of reading achievement of all males and the adjusted means of all females.

13.   There is no significant interaction of entry phonemic awareness level and method with reading achievement.

14.   There is no significant interaction of age and method on the adjusted means of spelling development.

15. There is no significant interaction of gender and method on the adjusted means of spelling development.

16. There is no significant interaction of socio-economic status and method on the adjusted means of spelling development.

17. There is no significant difference in the adjusted means of spelling development among the treatment groups.

18. There is no significant difference in the adjusted means of spelling development of all males and the adjusted mean of all females.

19. There is no significant interaction of entry phonemic awareness level and method with spelling achievement.

Limitations and Delimitations

Limitations

The limitations of this study are as follows:

1. The population includes only all first-grade classrooms within a school district located in a town of about 5,000 located in southwestern Montana. One hundred eighty students participated in the study along with nine teachers.

2. These teachers were volunteers for the study. Since the motivation and interest of volunteers over nonvolunteers provides a bias in the study, the results of a study based on volunteers are generalizable only to other volunteers (Gay, 1986, p. 116).

3. Intact groups were used with no opportunity to equalize them through assignment to classrooms.

4. There were teacher differences and varying experience levels which affected students. Control over teacher differences was limited to the careful training of the teachers in experimental group B, group planning of the lessons taught, and weekly monitoring by the researcher and by careful selection of the teachers for each group. See Appendix D for a summary of the qualifications of teachers by experience and by education.

5. There were possible effects of compensatory rivalry and/or resentful demoralization among students in the control groups which was not externally controlled. It was assumed that the well-planned lessons for all students would offset these effects along with commitment to find reliable results.

Delimitations

Delimitations of this study are as follows:

1. The study was conducted in a local school district which has nine first-grade teachers in one elementary school.

2. The period of the study was twenty-one weeks.

CHAPTER 4

ANALYSIS OF THE DATA

Introduction

The problem of this study was to determine if there was a significant difference in the reading and spelling achievement among first-grade students at the end of twenty-one weeks who were taught early literacy skills using

1. a literature-based reading program with incidental phonics

2. a literature-based reading program plus explicit instruction in traditional phonics or

3. a literature-based reading program plus explicit instruction in the letter-sound correspondences and subsequent spelling of words.

Nineteen hypotheses were tested for this investigation. The effects of the five independent variables of method, age, phonemic awareness level, socio-economic level, and gender on the four dependent measures of phonemic awareness, developmental spelling levels, basic reading skills, and total reading achievement were analyzed using a two-factor analysis of covariance. The phonemic segmentation test and the developmental spelling test were used as the covariates, resulting in differences reported as adjusted means. Where a significant difference was detected, Newman-Keuls was run to discover where those differences occurred.

In each treatment group, the students who could read at the beginning of the study and students who received special services through Title 1 were separated from the nonreaders. The central concern of this study was the impact of different literacy strategies on children who come into first grade not knowing how to read. Therefore, the analysis of each hypothesis concentrates on the nonreaders. However, data is given at the end of the chapter for the Title 1 students and for children who already know how to read coming into first grade.

For the purpose of testing significance, the .05 alpha level was selected. Each hypothesis is considered according to the four dependent measures of achievement.

Analysis of the Data

Phoneme Segmentation

The results of the ANCOVA for phonemic awareness as tested by the Yopp/Singer Segmentation Test using the variables of age, gender, and socio-economic status (SES) are detailed in Table 1. The pretests for phonemic awareness and developmental spelling are used as covariates. Hypotheses 1, 2, 3, 4, 5, and 6 will be discussed from this table.

Hypothesis 1: There is no significant interaction of age and method on the adjusted means of phonemic awareness.

Decision: Retain the null hypotheses. The p-value of .6843 is greater than the alpha of .05. There is no interaction between age and method on the adjusted means of phonemic awareness as tested with the Yopp/Singer Test of Phoneme Segmentation. Regardless of age the methods had a uniform effect.

Hypothesis 2: There is no significant interaction of gender and method on the adjusted means of phonemic awareness.

Decision: Retain the null hypotheses. There is no interaction between gender and method on the adjusted means of phonemic awareness as tested with the Yopp/Singer Test of Phoneme Segmentation. The p-value of .2137 is not significant at alpha .05. Regardless of gender the methods had a uniform effect.

Table 1. ANCOVA comparing the effect of age, gender, socio-economic status, and method on phoneme segmentation.

Phoneme Segmentation					
Source	df	Sum of Squares	Means Squared	F-value	p-value
Age and Method					
Age	2	10.17	5.09	.41	.6664
Method	2	2.06	1.03	.08	.9209
Age*Method	4	28.49	7.12	.57	.6843
Gender and Method					
Gender	1	1.75	1.75	.14	.7054
Method	2	5.29	2.64	.22	.8054
Gender *Method	2	38.29	19.14	1.57	.2137
SES and Method					
SES	1	5.56	5.56	.44	.5074
Method	2	9.49	4.73	.38	.6860
SES*Method	2	1.75	.87	.07	.9327

Hypothesis 3: There is no significant interaction of socio-economic status and method on the adjusted means of phonemic awareness.

Decision: Retain the null hypothesis. There is no interaction between socio-economic level and method on the adjusted means of phonemic awareness as tested with the Yopp/Singer Test of Phoneme Segmentation. The p-value of .9327 is not significant at alpha .05. Regardless of socio-economic level, the methods had a uniform effect.

Hypothesis 4: There is no significant difference in the adjusted means of phonemic awareness among the treatment groups.

Decision: Retain the null hypothesis. The p-values of the treatment group means(.9209, .8054, and .6860) are not significant at alpha .05. There is no statistically significant difference in the adjusted means of the treatment groups.

Hypothesis 5: There is no significant difference in the adjusted mean phonemic awareness of all males and the adjusted mean of all females.

Decision: Retain the null hypothesis. The p-value of .7054 is not significant at alpha .05. There is no difference in the way males scored over and above the way females scored.

Hypothesis 6: There is no significant difference in the adjusted means of phonemic awareness levels between the high and low socio-economic status.

Decision: Retain the null hypothesis. The p-value of .5074 is not significant at alpha .05. There is no difference in the way students from a low socio-economic status and those from a high socio-economic status score on phonemic segmentation.

The results of the ANOVA for phonemic awareness as tested by the Yopp/Singer Segmentation Test using the variables of entry level phonemic segmentation scores are detailed in Table 2. Hypothesis 7 will be discussed from this table.

Table 2. ANOVA comparing the effect of entry level phonemic levels on post phonemic segmentation scores.

Phoneme Segmentation Scores					
Source	df	Sum of Squares	Means Squared	F-value	p-value
Entry Phonemic Level					
Entry PA	2	20.09	10.05	.83	.4377
Method	2	2.94	1.47	.12	.8852
Entry PA*Method	4	63.09	15.77	1.31	.2728

Hypothesis 7: There is no significant interaction of entry phonemic awareness level and method with phonemic awareness.

Decision: Retain the null hypothesis. There is no significant interaction between entry level phonemic awareness levels and method. There is no interaction between entry level phonemic levels and method on the means of phonemic awareness as tested with the Yopp/Singer Test of Phoneme Segmentation. The p-value of .2728 is not significant at alpha .05. Regardless of the entry phonemic level of the student, the methods had a uniform effect.

Table 3. Comparison of the raw means and the adjusted means of phoneme segmentation

Phoneme Segmentation				
	Raw means	Adjusted means		
		Age	Gender	SES
Control Group	18.31	18.23	18.26	18.26
Experiment A	17.80	18.21	17.73	17.50
Experiment B	18.04	17.77	18.21	18.21

Table 3 shows the effect of the covariate on the raw means of phoneme segmentation when the factors of age, gender and socio-economic status were incorporated into the analysis. None of the adjusted means were significant.

Reading Achievement

The two measures of reading achievement, Basic Reading Skills and Total Reading, were derived from the subtests of the Woodcock Reading Mastery Tests-Revised. The Word Recognition Test plus the Word Attack Test comprised the Basic Reading Skill Score. The Word Recognition Test plus the Passage Comprehension test comprised the Total Reading Score.

The results of the ANCOVA for reading achievement as tested by the Woodcock Reading Mastery Tests-Revised using the variables of age, gender, and socio-economic status (SES) are detailed in Table 4. The pretests for phonemic awareness and developmental spelling are used as covariates. Hypotheses 8, 9, 10, 11, and 12 will be discussed from this table.

Hypothesis 8: There is no significant interaction of age and method on the adjusted means of reading achievement.

Decision: Retain the null hypothesis for non-readers. The p-value of the interaction between the treatment group means for Basic Skills (.8335) and Total Reading (.8078) and age is > alpha .05. There is no statistically significant difference in the adjusted means of the treatment groups. All three treatments produced uniform results in all age groups.

Table 4. ANCOVA comparing the effect of age, gender, socio-economic status (SES), and method on Basic Skills and Total Reading.

	Source	df	Sum of Squares	Means Squared	F-value	p-value
			Reading Achievement			
Age and Method						
Basic Skills	Age	2	392.92	196.46	2.39	.0978
	Method	2	473.24	236.62	2.88	.0618
	Age*Method	4	119.66	29.91	.36	.8335
Total Reading	Age	2	287.39	143.70	1.25	.2915
	Method	2	833.78	416.89	3.63	**.0308***
	Age*Method	4	183.98	46.00	.40	.8078
Gender and Method						
Basic Skills	Gender	1	8.27	8.27	.10	.7554
	Method	2	526.07	236.04	3.10	**.0499***
	Gender *Method	2	67.87	33.94	.40	.6712
Total Reading	Gender	1	88.96	88.96	.77	.3826
	Method	2	1278.30	639.16	5.53	**.0055***
	Gender*Method	2	65.98	32.99	.29	.7522
SES and Method						
Basic Skills	SES	1	87.32	87.32	1.10	.2963
	Method	2	746.79	373.39	4.72	**.0113***
	SES*Method	2	365.39	182.70	2.31	.1053
Total Reading	SES	1	103.00	103.00	.92	.3391
	Method	2	1472.80	713.91	6.41	**.0026***
	SES*Method	2	307.00	153.50	1.38.	.2577

Hypothesis 9: There is no significant interaction of gender and method on the adjusted means of reading achievement.

Decision: Retain the null hypothesis for non-readers. The p-value of the interaction between the treatment means for Basic Skills (.7554) and Total Reading (.7522) and age is greater than alpha .05. There is no statistically significant difference in the adjusted means of the treatment groups. All three treatments produced uniform results with both males and females.

Hypothesis 10: There is no significant interaction of socio-economic status and method on the adjusted means of reading achievement.

Decision: Retain the null hypothesis for nonreaders. The p-value of the interaction between the treatment means for Basic Skills (.1053) and Total Reading (.2577) and socio-economic status is > .05. There is no statistically significant difference in the adjusted means of the treatment groups. Regardless of socio-economic level, the methods had a uniform effect.

Hypothesis 11: There is no significant difference in the adjusted mean of reading achievement among the treatment groups.

Decision: Reject the null hypothesis. P-values of .0618, .0499, and .0113 were reported for the adjusted means of Basic Skills. When age was used as a factor, the p-value (.0618) was > alpha .05, and therefore was not significant. However, when gender and socio-economic status were used as factors, the p-values (.0499 and .0113) were < alpha .05 and therefore statistically significant. The adjusted means of Total Reading had p-values of less than .05 and were therefore statistically significant. Table 5 compares the raw and adjusted means for both the Basic Reading Skills and the Total Reading when the factors of age,

gender, and socio-economic status were incorporated into the analysis. Significant

differences are in bold.

Table 5. Comparison of the raw means and the adjusted means of reading achievement

	Reading Achievement			
	Raw means	Adjusted means		
Basic Reading Skills		Age	Gender	SES
Control Group	102.7	102.5	102.5	102.3
Experiment A	103.6	100.3	101.9	100.9
Experiment B	105.7	108.9	**107.7***	**109.0***
Total Reading				
Control Group	101.0	101.1	100.8	100.7
Experiment A	100.2	96.45	98.13	96.76
Experiment B	105.0	**108.7***	**107.8***	**108.5***

Newman-Keuls was applied to the adjusted means of the statistically significant values

for Basic Skills and Total Reading. Although there was a significant difference among the

means of Basic Skills that were adjusted for gender, Newman-Keuls did not detect any pair-

wise differences. However, for the means of Basic Skills with the variable of SES, pair-wise

differences were detected between the groups. The experimental group B consistently had

higher adjusted means than the control group or the experimental group A while there was no

difference between the control group and experimental group A.

Newman-Keuls was also applied to each of the adjusted means of Total Reading .

Pair-wise differences were detected among the groups. For each of these comparisons, the

experimental group B consistently had higher adjusted means than the control group or the

experimental group A while there was no difference between the control group and experimental group A.

Hypothesis 12: There is no significant difference in the adjusted mean reading achievement of all males and the adjusted mean of all females.

Decision: Retain the null hypothesis. The p-values of .7554 for Basic Skills and .3826 for Total Reading are not significant at alpha .05. There is no difference in the way males scored over and above the way females scored.

The results of the ANOVA for reading achievement as tested by the Woodcock Reading Mastery Tests-Revised using the variables of entry level phonemic segmentation scores are detailed in Table 6. Hypothesis 10 will be discussed from this table.

Table 6. ANOVA comparing the effect of entry level phonemic levels on reading achievement.

	Reading Achievement					
	Source	df	Sum of Squares	Means Squared	F-value	p-value
Basic Reading						
	Entry PA	2	295.18	147.59	1.36	.2610
	Method	2	188.97	94.78	.87	.4212
	Entry PA*Method	4	254.31	63.58	.59	.6723
Total Reading						
	Entry PA	2	531.57	265.78	1.76	.1783
	Method	2	327.64	163.82	1.08	.3427
	Entry PA* Method	4	186.34	46.59	.31	.8716

Hypothesis 13: There is no significant interaction of entry phonemic awareness level and method with reading achievement.

Decision: Retain the null hypothesis. The p-value of .6723 is > .05 so there is no significant interaction of the entry phonemic awareness level and method with reading achievement. No matter what the entry phonemic awareness level, all methods had a uniform effect.

Spelling

The results of the ANCOVA for developmental spelling using the test and scoring developed by Morris and Perney (1984) using the variables of age, gender, and socio-economic status (SES) are detailed in Table 7. The pretests for phonemic awareness and developmental spelling are used as covariates. Hypotheses 14, 15, 16, 17, and 18 will be discussed from this table.

Hypothesis 14: There is no significant interaction of age and method on the adjusted means of spelling development.

Decision: Retain the null hypothesis for nonreaders. The p-value of the interaction between the treatment group means (.1125) and age means is > alpha .05. There is no statistically significant difference in the adjusted means of the treatment groups. All three treatments produced uniform effects in all age groups.

Hypothesis 15: There is no significant interaction of gender and method on the adjusted means of spelling development.

Decision: Retain the null hypothesis for nonreaders. The p-value of .4487 is not significant at alpha .05. Spelling development scores were not affected by gender.

Hypothesis 16: There is no significant interaction of socio-economic status and method interact on the adjusted means of spelling development.

Decision: Retain the null hypothesis. The p-value of .2910 is not significant at alpha .05. There is no difference in the scores of students who come from high and low socio-economic levels.

Table 7. ANCOVA comparing the effect of age, gender, socio-economic status, and method on spelling achievement.

Spelling Achievement					
Source	df	Sum of Squares	Means Squared	F-value	p-value
Age and Method					
Age	2	119.24	59.62	.85	.4332
Method	2	1772.00	885.98	12.56	**.0000***
Age*Method	4	545.66	136.42	1.93	.1125
Gender and Method					
Gender	1	47.39	47.39	.64	.4260
Method	2	1480.00	740.00	9.99	**.0001***
Gender *Method	2	119.86	59.93	.81	.4487
SES and Method					
SES	1	7.82	7.82	.11	.7454
Method	2	1550.80	775.42	10.52	**.0001***
SES*Method	2	184.69	92.34	1.25	.2910

Hypothesis 17: There is no significant difference in the adjusted mean of spelling development among the treatment groups.

Decision: Reject the null hypothesis. The p-values .0000 and .0001 are significant at

.05 alpha. When Newman-Keuls was applied to the adjusted means of developmental

spelling of nonreaders, the experimental group B consistently had higher adjusted means than

the control group or the experimental group A while there was no difference between the

control group and experimental group A. Table 8 compares the raw and adjusted means for

developmental spelling.

Table 8. Comparison of the raw means and the adjusted means of spelling achievement.

	Spelling Achievement			
	Raw means	Adjusted means		
		Age	Gender	SES
Control Group	65.22	64.93	65.20	64.99
Experiment A	67.40	63.47	66.52	66.78
Experiment B	74.11	**78.18***	**74.99***	**76.45***

Hypothesis 18: There is no significant difference in the adjusted mean spelling

development of all males and the adjusted mean of all females.

Decision: Retain the null hypothesis. The p-value of .4260 is not significant at alpha

.05. There is no difference in the ways males scored over and above the way females scored.

The results of the ANOVA for spelling development using the variable of entry level

phonemic segmentation scores are detailed in Table 9 . Hypothesis 19 will be discussed

from this table.

Hypothesis 19: There is no significant interaction of entry phonemic awareness level

and method with spelling achievement.

Decision: Retain the null hypothesis. The p-value of .6723 is > .05 so there is no significant interaction of the entry phonemic awareness level and method with reading achievement. Regardless of the entry phonemic awareness level, the methods had a uniform effect.

Table 9. ANOVA comparing the effect of entry level phonemic levels on reading achievement.

Spelling Achievement					
Source	df	Sum of Squares	Means Squared	F-value	p-value
Entry PA	2	295.18	147.59	1.36	.2610
Method	2	188.97	94.78	.87	.4212
Entry PA*Method	4	254.31	63.58	.59	.6723

Letter Recognition, Letter Writing, and Letter Sounds

Table 10 reports the ANOVAs that compared the achievement of the three treatment groups with regard to identification of letter sounds, letter recognition, and letter writing.

Table 10. Summary of the ANOVAs of achievement in letter recognition, letter writing, and identification of letter sounds.

Achievement in Letter Recognition, Letter Writing, and Identification of Letter Sounds					
Source	df	Sum of Squares	Means Squared	F-value	p-value
Letter Recognition	2	5.78	2.89	4.91	**.0094**
Letter Writing	2	128.39	64.19	7.53	**.0009**
Letter Sounds	2	15.34	7.67	2.65	.0762

The p-values of .0094 and .0009 are significant at .05 alpha. When Newman-Keuls was applied to the means of letter recognition, there was no difference between the control group and either of the experimental groups, but the experimental group B had higher means than experimental group A. However, it must be kept in mind that there is only a total possible of twenty-six, and each of the treatment groups scored only a fraction below that total. With this in view, the low p-value is used with caution.

When Newman-Keuls was applied to the means of letter writing, there was no difference detected between the control group and experimental group B, but both of these had higher means than experimental group A.

All three treatment groups performed uniformly on identification of letter sounds. Table 11 shows the comparison of the means of the achievement in letter recognition, letter writing, and identification of letter sounds at the end of the study.

Table 11. Comparison of the means of achievement in letter recognition, letter writing, and identification of letter sounds.

Achievement in Letter Recognition, Letter Writing, and Identification of Letter Sounds			
	Raw Means		
	Control Group	Experimental A	Experimental B
Letter Recognition	25.44	25.20	25.81
Letter Writing	49.81	47.14	49.11
Letter Sounds	24.13	24.57	25.15

Readers and Title 1 Students

Readers and Title 1 students were separated from the group of nonreaders because of their special situations. Children who were reading entered first grade with skills in word

attack, reading comprehension, word recognition, spelling, and phonemic awareness that the nonreaders had not yet developed. Title 1 children entered first grade with deficiencies in letter knowledge, print awareness, and phonemic awareness.

There was such a small number of children represented in each treatment group that a two-factor ANCOVAS with the variables of gender, age, socio-economic status, and entry level phonemic awareness could not be run without having empty reference cells. Therefore, only the one-factor ANCOVA was used to analyze the data from the readers and Title 1 students. Table 12 gives the details of the one-factor ANCOVA for readers and Title 1 students. It also gives the details of the one-factor ANOVA utilized for achievement in letter recognition, letter writing, and identification of letter sounds.

There were no statistical differences in the achievement in phoneme segmentation, Basic Skills, Total Reading, spelling development, letter recognition, letter writing, or identification of letter sounds for readers or for Title 1 students. All p-values were > .05.

Table 12. ANCOVA comparing the effect of the treatment on phonemic segmentation, reading achievement, spelling development, letter recognition, letter writing, and identification of letter sounds for readers and Title 1 students.

Source	df	Sum of Squares	Means Squared	F-value	p-value
Readers					
Phonemic Segmentation	2	8.84	4.42	.53	.5930
Basic Skills	2	101.38	50.69	.70	.5065
Total Reading	2	206.45	103.22	.88	.4250
Spelling Development	2	246.73	123.36	2.86	.0753
Letter Recognition	2	.05	.02	.41	.6699
Letter Writing	2	11.34	5.66	3.03	.0643
Letter Sounds	2	1.76	.88	2.74	.0818
Title 1 Students					
Phonemic Segmentation	2	21.65	10.83	.23	.7971
Basic Skills	2	110.15	55.07	.63	.5505
Total Reading	2	645.84	322.92	3.02	.0901
Spelling Development	2	112.88	56.44	.32	.7310
Letter Recognition	2	14.17	7.09	2.23	.1467
Letter Writing	2	104.01	52.00	1.84	.1979
Letter Sounds	2	16.38	8.19	1.40	.2814

Table 13 gives a summary of the raw and adjusted means for this group. The adjusted means shows the effect of the covariate on the raw means when the factors of age, gender and socio-economic status were incorporated into the analysis. None of the raw means or adjusted means were significant.

Table 13. Summary of raw and adjusted means for phoneme segmentation, Basic skills, Total Reading, Spelling development, Letter Recognition, Letter Writing, and Identification of Letter Sounds for the group of readers and Title 1 students.

	READERS		TITLE 1	
	Raw means	Adjusted means	Raw means	Adjusted means
Phoneme Segmen.				
Control Group	19.27	19.30	15.29	15.09
Experiment A	19.91	19.79	16.00	15.59
Experiment B	18.33	18.44	17.50	18.10
Basic Skills				
Control Group	118.1	117.5	89.86	87.46
Experiment A	119.7	119.8	87.00	90.09
Experiment B	121.3	122.0	95.80	95.11
Total Reading				
Control Group	120.1	119.4	72.75	73.21
Experiment A	123.9	124.7	86.14	86.69
Experiment B	124.9	124.9	91.00	89.87
Spelling				
Control Group	76.55	76.38	47.71	49.82
Experiment A	79.64	79.51	54.25	52.84
Experiment B	83.11	83.47	57.60	56.52
Letter Recognition				
Control Group	25.91	---	24.57	---
Experiment A	25.91	---	22.75	---
Experiment B	26.00	---	25.20	---
Letter Writing				
Control Group	51.36	---	47.29	---
Experiment A	50.09	---	41.00	---
Experiment B	50.11	---	46.00	---
Letter Sounds				
Control Group	25.36	---	22.86	---
Experiment A	25.91	---	22.00	---
Experiment B	25.78	---	24.60	---

Summary of the Analysis

Analysis of the scores of the nonreaders showed no interaction between age, gender, socioeconomic status, or entry level phonemic segmentation skills and treatment method on the adjusted means of student scores. In other words, all three methods had a uniform effect on the three age groups, males and females, the socio-economic level, and the entry phonemic level. The same results were found when the analysis was conducted for students entering first grade reading and for Title 1 students. One method did not work better than another for a particular age group, gender, socio-economic level, or entry phonemic level.

In addition, no statistical difference was found in the adjusted means of phoneme segmentation among the three treatment groups for nonreaders, readers, and Title 1 students. All students progressed uniformly using each of the three treatment methods.

When analysis was conducted on the scores of Basic Skill, a test comprised of word recognition and word attack, a significant difference was detected using the two variables of gender and socio-economic status, but not when the variable of age was implemented. When the variable of socio-economic status was used, it was found that the experimental group B had higher adjusted means than the control group or the experimental group A while there was no difference between the control group and experimental group A.

When analysis was conducted on the Total Reading , a test comprised of word recognition and passage comprehension, a significant difference was detected on the three variables of gender, socio-economic status, and age. It was found that the experimental group B consistently had higher adjusted means than either of the two other groups. This suggests

that the treatment used in the experimental group B contributes to both the reading and spelling development of young children.

The analysis of variance conducted on letter recognition, letter writing, and identification of letter sounds showed statistical differences in two areas. Although a difference was detected in letter recognition, all three treatment groups had near-perfect scores. For this reason, that p-value carries less weight. However, the differences detected in letter writing showed that the experimental group A had lower scores than either of the other two groups.

When a two-factor analysis of covariance was conducted on the scores of phoneme segmentation, Basic Skills, Total Reading, or spelling development of the readers and of the Title 1 students, no statistical differences were detected. An analysis of variance run on letter recognition, letter writing, and identification of letter sounds also did not detect any differences. It is important to note that each of these groups was considerably smaller in number and represented unique situations. Readers come to school with skills beyond those of their counterparts who cannot read. Title 1 students come to school with deficiencies in letter knowledge, phoneme awareness, and other skills related to reading, but receive extra help and teaching in the school setting. These outside variables may influence the outcome.

Teacher Feedback

During the twenty-one week study, the three teachers implementing the spelling before reading curriculum gave both verbal and written feedback. In addition, they also completed a four-page evaluation found in Appendix I. In one-on-one meetings and in the written

evaluations, the teachers repeatedly made three comments:

1) "We have arrived where we are without effort."

2) "All the children, no matter what their ability, are confident they can read and write."

3) "Whether the results are statistically significant or not, we plan to continue to use it."

Although "sounding out" words or reading words from contextual clues was not a direct part of this approach, teachers commented on the children's ability to use both of these tools effectively in their reading.

In summary, their overall comments were positive. They plan to continue to use the curriculum because of the ease of teaching, the positive attitude the children have toward it, and the positive results they observed in their classrooms.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

During the last two decades a large body of research has been produced that establishes the relationship between phonemic awareness and reading and spelling achievement (Spector, 1987). However, quantitative studies are scarce to nonexistent which translate that knowledge into effective teaching strategies for the classroom. The purpose of this study was to explore a possible approach to literacy acquisition that would help children in their reading and spelling development based on the phonemic awareness research. The following conclusions can be drawn from the findings of this study.

1. Teaching children how to represent phonemes with letters and then engaging them in activities that map speech to print produced the most effective approach to reading and spelling achievement. It was more effective than traditional phonics and more effective than merely engaging children in reading and writing in a literacy-rich environment. This supports the body of research that indicates that awareness of phonemes and how they map to print is a key predictor of both reading and spelling achievement (Clay ,1979; Ehri & Wilce, 1987; Ellis & Cataldo, 1990; Honig, 1997). Morris and Perney (1987) found a direct correlation between developmental spelling and reading achievement. Henderson (1992), Ball and Blachman (1991), and Stuart

and Colheart (1989) all note that the process of moving from phoneme to grapheme enhances a child's conceptual understanding of words and of the reading process.

2.   Teaching children the individual phonemes and mapping them to print was more effective than using word families to increase reading and spelling achievement. Some researchers advocate the use of word families as a key strategy (Goswami & Bryant, 1990; Gunning, 1995) but in this study it did not produce superior results. Instead, this study supports the research that states first-grade students quickly need access to all of the phonemes of our language and that in order to understand English it must be understood at the phonemic level (Calfee & Henry, 1996; Henderson, 1992; Liberman, cited in Morais, 1991).

3.   Teaching children the phonemes and mapping them to print was not more effective than traditional phonics or a whole language approach in developing phoneme segmentation skills. It was expected that learning the individual phonemes and mapping them to print would cause significantly higher achievement in phoneme segmentation abilities, but it did not. All treatment groups progressed at a uniform rate. Blachman (1984, Bradley and Bryant (1985), Juel (1984) and several other researchers report that the ability to do phonemic tasks is predictive of early reading and spelling success. In this case, the highest reading and spelling achievement was not associated with the highest phonemic segmentation scores. However, it must be noted that the students in all of the classrooms were systematically introduced to letters and sounds and engaged in meaningful reading and writing tasks. The differences between the classrooms occurred only in the ways sounds, letters, and

words were introduced. This may indicate that children are able to increase phoneme segmentation skills using a variety of approaches.

5.   The ability to recognize and write letters, to identify the sounds of letters, and to hear the separate sounds of speech (phoneme segmentation skills) were not the differentiating skills in this study. It has been demonstrated that phonemic awareness taught in conjunction with instruction in the letter-sound relationship produces more effective results than either method taught alone (Blachman, 1984; Bradley & Bryant, 1983, 1985, 1991). However, the children in all three treatment groups of this study performed equally well in both phoneme segmentation and in their knowledge of letters and sounds. The ability to map the phoneme to print was the differentiating skill among the groups as shown by the developmental spelling test.

4.   Gender, age, or socio-economic status did not have an effect on the reading and spelling achievement of the students. All three methods were equally effective. This supports the research which encourages a literacy-rich environment with meaningful engagement in reading and writing to meet the needs of a diverse population.

In addition to the above conclusions, it is important to note that all three of the teachers implementing the strategy stated that the program was "teacher-friendly." Although no data was collected in this particular study on teacher or student attitudes, teachers repeatedly reported the ease of teaching, their observation of a positive and confident attitude among the children, and their observation of reading and spelling achievement "without effort." This was an expected result based on the research of the relationship between writing and reading. Durkin (1966) stated that the ability to read is a by-product of the ability to print

and spell. Anbar (1984,1986) found that young children who learned to read spontaneously chose to spell words before learning to reading. Clay (1979) suggested children may not need phonics instruction if they approach reading through mapping phonemes to print. Both Montessori (1964) and Chomsky (1979) acknowledged that children find it easier and more natural to begin spelling than to begin reading. If children are learning to write and read in a sequence that is more natural to them, it would more likely take less effort.

In conclusion, it can be stated that the introduction of phonemes and the subsequent spelling of words before reading is an approach to literacy acquisition that produced significant results in the classroom. Regardless of age, gender, socio-economic status, or entry phonemic level, first-grade students benefited from this approach.

Recommendations

Recommendations for Curriculum and Instruction

The purpose of the curriculum used in this study was not to supplant the adopted reading curriculum in the classroom, but to provide a way for teachers to incorporate critical skills that are based on research. On the basis of the foregoing conclusions, there are two general recommendations.

1. Engaging first-grade students in spelling words using their knowledge of phonemes needs to be implemented in classrooms. If teachers understand the basic principles behind this approach, adaptations and a variety of activities can be developed.

2.   Teachers who desire to use this approach to teach literacy need an understanding in

four basic areas:

    a)   Phonological processing and phonemic awareness

    b)   Structure of the English language which includes a discussion of the historical

        influences on the language and of the three levels of English: morphemes,

        syllables, phonemes

    c)   The process used by young children who learn to read on their own

    d)   Principles of constructivisiom: helping children develop understanding by

        thinking and participating, tapping into prior knowledge, utilizing social

        interaction, and providing a supportive, risk-free environment.

In addition, several strategies for implementing these principles need to be modeled

for the teachers. With this foundation, teachers will be better able to take the principles of this

study and make minor adjustments to fit their own teaching style and the needs of individual

children.

Recommendations for Further Study

There are several questions which remain at the conclusion of this study:

1.   What effect would this curriculum have with different populations with different

demographics? What results would be noted with larger populations or a larger

number of teachers?

2.   What are the long-term effects of this approach to literacy acquisition? What impact

will this have on these children at the end of second grade? Sixth grade? Will there be

a statistical difference in their later reading, spelling, or writing achievement?

3.   Would word or phoneme charts further aid children in literacy acquisition? In this study, classroom charts did not support the strategies used.

4.   Would decodable text improve reading achievement among these children? In this study, children used a wide variety of literature without regard to providing decodable text.

5.   In this study, the spelling before reading curriculum had several components such as acting out the sound, identifying phonemes in words, and dictation as well as spelling individual words and then reading them. Which strategies used in this study are most useful? Which ones are not actually helpful?

6.   To what extent did the adopted basal series support the spelling before reading curriculum? To what extent did it hinder it?   What would be the results if another basal series were used?

7.   What affect would these strategies have on other grade levels, such as kindergarten or grades higher than first?

8.   What would be the results if spelling before reading were used in conjunction with a basal stressing systematic, explicit phonics? What would be the differences in achievement between students using spelling before reading plus the phonics basal and those using only the phonics basal?

9.   Visual Phonics is a program that teaches children hand signs for each of the sounds. What would be the affect of using Visual Phonics instead of acting out the sound?

Further investigations need to continue to tie together the four areas of research used in this study: (1) phonological processing, particularly phonemic awareness, (2) the structure of English orthography, (3) the stages of reading acquisition of early spontaneous readers, and (4) constructivism as described by Piaget and Vygotsky. A greater understanding of the effects as well as the possible variations of the approach use din this study will help bridge the chasm between research and classroom practice.

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APPENDICES

APPENDIX A

Forty Massachusetts Professors and Researchers

Forty Massachusetts specialists in linguistics and psycholinguistics sent a letter to Dr. Robert V. Antonucci, Commissioner of Education, Commonwealth of Massachusetts on July 12, 1995, concerning the standards of reading instruction in Massachusetts. The signers are listed as follows in alphabetic order:

1. Emmon Bach, Linguistics, University of Massachusetts at Amherst; *President, Linguistic Society of America*

2. Andrea Calabrese, Linguistics, Harvard

3. Dr. David Caplan, Neurology, Massachusetts General Hospital; *Director of the Reading Disability Conic, Massachusetts General Hospital*

4. Charles Clifton, *Chair, Department of Psychology*, University of Massachusetts at Amherst

5. Mark Feinstein, *Dean of Cognitive Science & Cultural Studies,* Hampshire College

6. Kai von Fintel, Linguistics, MIT

7. Suzanne Flynn, Foreign Languages and Literatures/Linguistics, MIT

8. John Frampton, Mathematics, Northeastern University

9. Lyn Frazier, Linguistics, University of Massachusetts at Amherst

10. Edward Gibson, Brain and Cognitive Sciences, MIT

11. Kenneth Hale, Linguistics, MIT; *former President (1994), Linguistic Society of America; Member, National Academy of Sciences; Fellow, American Academy of Arts and Sciences*

APPENDIX A--<u>Continued</u>

12. Morris Halle, Institute Professor, Linguistics, MIT; *former President (1973), Linguistics Society of America; Member, National Academy of Sciences; Fellow, American Academy of Arts and Sciences*

13. Irene Heim, Linguistics, MIT

14. Kyle Johnson, Linguistics, University of Massachusetts at Amherst

15. James Harris, Foreign Languages and Literatures/Linguistics, MIT

16. Ray Jackendoff, Linguistics/Volen Center for Complex Systems, Brandeis, *Author, Patterns in the Mind*

17. Samuel J. Keyser, Linguistics, MIT

18. Michael Kenstowicz, Linguistics, MIT

19. John Kingston, Linguistics, University of Massachusetts at Amherst

20. John McCarthy, *Chair, Department of Linguistics,* University of Massachusetts at Amherst

21. Joan Maling, Linguistics/Volen Center for Complex Systems, Brandeis

22. Gary Marcus, Psychology, University of Massachusetts at Amherst

23. Dr. Janis Melvold, Neurology, Massachusetts General Hospital

24. Shigeru Miyagawa, Foreign Languages and Literatures/Linguistics, MIT

25. Mary Catherine O'Connor, Developmental Studies and Applied Linguistics, Boston University

26. Wayne O'Neil, *Chair, Department of Linguistics and Philosophy,* MIT

27. Barbara Partee, Linguistics, University of Massachusetts, Amherst; *former President (1986)(, Linguistics Society of America; Member, National Academy of Sciences; Fellow, American Academy of Arts and Sciences*

APPENDIX A--<u>Continued</u>

28.   David Pesetsky, Linguistics, MIT; *Co-director, Research Training Program "Language" Acquisition and Computation"*

29.   Steven Pinker, Brain and Cognitive Sciences, MIT; *Director, McDonnell-Pew Center for Cognitive Neuroscience; author, The Language Instinct*

30.   Alexander Pollatsek, Psychology, University of Massachusetts at Amherst

31.   Mary C. Potter, Brain and Cognitive Sciences, MIT

32.   Janet Randall, *Director, Linguistics Program,* Northeastern University

33.   Keith Rayner, Psychology, University of Massachusetts at Amherst

34.   Thomas Roeper, Linguistics, University of Massachusetts at Amherst

35.   Elisabeth O. Selkirk, Linguistics, University of Massachusetts at Amherst

36.   Margaret Speas, Linguistics, University of Massachusetts at Amherst

37.   Esther Torrego, *Chair, Department of Hispanic Studies,* University of Massachusetts at Boston

38.   Dr. Gloria Waters, Neuropsychology Lab, Massachusetts Genera Hospital; School of Communication Sciences and Disorders, McGill University

39.   Calvert Watkins, Linguistics/Classics, Harvard

40.   Kenneth Wexler, Department of Grain and Cognitive Sciences, MIT; *Co-director, Research Training Program "Language Acquisition and Computation"*

APPENDIX B

DISTRIBUTION OF STUDENTS AMONG THE NINE CLASSROOMS

	Control Group Basal Only			Experimental Group A Basal + SRA Phonics			Experimental Group B Basal + Word Workshop		
Initial	53			52			46*		
Moved	-3			-2			-5		
Total	50			50			41		
	Nonreaders	Readers	Title 1	Nonreaders	Readers	Title I	Nonreaders	Readers	Title 1
Age									
6.5 +	13	3	2	18	8	3	17	2	2
7.1 +	10	5	3	16	3	1	8	5	2
7.6 +	9	3	2	1	0	0	2	2	1
SES									
High	18	11	4	25	11	1	21	8	4
Low	14	0	3	10	0	3	6	1	1
Gender									
Male	17	6	2	21	3	4	12	5	3
Female	15	5	5	14	8	0	15	4	2
Total	32	11	7	35	11	4	27	9	5

*Experimental Group B had a higher number of students who were excluded from the study. All three students who were retained were in these classrooms. This group also had a higher percentage of students receiving special services in the resource room.

The age of the student at the conclusion of the study was calculated.
The socio-economic status was determined through free or reduced lunches and paid lunches.

DEMOGRAPHICS BY PERCENTAGES

Age			Socio-economic Status		Gender	
6.5-7.0	7.1-7.5	7.6 up	High	Low	Male	Female
48%	38%	14%	78%	27%	52%	48%

APPENDIX C

CLASSROOM PLACEMENT FOR FIRST GRADERS: 1997-1998

The following is excerpted from a memo sent to the teachers by the principal of the school.

Rationale behind placement decisions:
1. Balance rooms with boys and girls
2. Balance rooms with high, middle, and low achievers
3. Evenly distribute "needy" students among ALL teachers (whether due to behavior or special challenges, etc.)
4. Evenly distribute Title 1 students throughout classrooms
5. Distribute special education students with similar in-class needs in the same classrooms

Number of Students in Each Category Per Classroom

Classroom	High achievers	Middle achievers	Low achievers	Total Children in classroom	Special Ed	Title I	Stars (neediness)
Control	4	9	4	17	1	2	8
Control	5	9	4	18	0	2	8
Control	5	7	5	17	0	4	7
Exper. A	4	8	4	16	2	2	7
Exper. A	5	9	4	18	1	3	8
Exper. A	4	11	4	19	1	3	8
Exper. B	5	8	4	17	1	2	8
Exper. B	5	8	4	17	1	2	8
Exper. B	4	8	5	17	2	2	7

Totals per group

	High achievers	Middle achievers	Low achievers	Total Children in classroom	Special Ed	Title I	Stars (neediness)
Control	14	25	13	52	1	8	23
Exper. A	13	28	12	53	4	8	23
Exper. B	14	24	13	51	4	6	23

APPENDIX D

SUMMARY OF THE EXPERIENCE AND EDUCATION OF TEACHERS

Averages of Each Group	Control Group	Experimental A	Experimental B
Level of Education	BA+15 ME ME+15	BA+15 BA+15 BA+15	BA+15 BA+15 BA+15
Years of Teaching	16+ 16+ 6-10	11-15 11-15 6-10	11-15 11-15 6-10
Years Teaching 1st Grade	1-5 6-10 16+	1-5 6-10 6-10	1-5 11-15 11-15

APPENDIX E

TEACHER TRAINING FOR TEACHERS USING THE WORD BUILDING LESSONS

I.   Introduction and background

II.   Four basic areas of research behind the project

    A.   Early spontaneous Readers

    B.   Structure of the English language

        1. Reflection of the history of the language

        2. Three levels of English: Morphemes, Syllables, Phonemes

    C.   Phonological processing and phonemic awareness

    D.   Constructivism

        1. Developing understanding by thinking and participating

        2. Tapping into prior knowledge

        3. Social interaction

        4. Supportive, risk-free environment

        5. Primary concepts vs. bits and pieces

III.   Practical Experience

    A.   Identifying all of the English phonemes

    B.   Discussion and practice of the components of the program

        1. Introduction of phonemes

        2. Word building through writing, tiles, games

        3. Dictation

APPENDIX F

LETTER TO PARENTS

August 27, 1997

Dear First Grade Parents,

We welcome you and your chldren to first grade! We know how exciting and important this year in school is for children. Every first-grader wants to learn to read, and we want to use every available tool and instructional method to help them become successful readers.

Last year we purchased a new basal reading program for grades kindergarten through six.   As we begin to use the new program, we want to assess its effectiveness. We will assess each student during the first days of school, August 28th and 29th , and again at the end of the semester. Evaluating the effectiveness of our new reading program helps us know if we need to provide additional materials and activities to support our curriculum.

If you have any questions or concern about the reading assessment or about our reading program, please call me at ---------.

Sincerely,

-----------, Principal

APPENDIX G

DEVELOPMENTAL SPELLING TEST

Developed by Darrell Morris and Jan Perney, 1984
National College of Education

Begin by modeling a "sound-it-out" spelling of the sample word *mat* on the blackboard.

SAY:	*mat.* What do I hear first in *mat?*	/m/
	What letter do I put down first?	m
DO:	Write *m* on the chalkboard, flipchart.	
SAY:	*mat.* (Say the word slowly, but not so slowly as to segment the phonemes artificially).	
	What letter comes next?	a
DO:	Write *a* next to the *m.*	
SAY:	*mat.*	
	What letter comes next?	t
DO:	Write *t* after the *ma.*	

After the sample spelling has been modeled, dictate the 18 spelling words, nine one day and nine the next.

1.   ●Have children put their finger on the *number* of the line in order to identify the line on which they are to write.
2.   ●Pronounce each word naturally (*not sounded out*),   ●Use it in a simple sentence.
      ●Pronounce the word a second time.
3.   ●Encourage children to spell the words the very best they can.
      ●Praise them for all attempts at writing.

Day 1		Day 2	
1.	back	1.	light
2.	sink	2.	seed
3.	mail	3.	dragon
4.	dress	4.	stick
5.	picking	5.	side
6.	lake	6.	feet
7.	rice	7.	bed
8	peeked.	8.	gate
9.	stamp	9.	test

APPENDIX H

SCORE KEY FOR DEVELOPMENTAL SPELLING TEST

	Prephonetic			Phonetic	Transitional
	(0)	(1)	(2)	(3)	(4)
1. back	AEORL	B	BK BA	BAC BAK BAKE	BACKE
2. sink	K	S or C	CK CIEK	SEK or SEC SECK SIK SIC SEINGK SENK SING SEEK SEENK SECE	SINGK SINGCK
3. mail	RWLRW	MORDE	MOL	MAL MAOL MAEYL MALL MEL* MELE*	MAEL MALLE MALE MAYL MAILL
4. dress	S	D or J	JS JRS KRAS JRIS GRAS	JAS DERES DURAS JRES DREES DRESE	DRES
5. picking		P	PKN PIING PACEN	PEKN PIKN PICN PECING PACKING PICEING PICEG PICEN	PIKING PICING
6. lake		LT	LAT	LAC or LAK LACK	LAEK LACE LAYK

APPENDIX H--Continued

SCORE KEY FOR DEVELOPMENTAL SPELLING TEST, cont.

7. rice		R	ROAC	RIS RIIS	RISE RIES RIESE
8. peeked			PT PED PET PEC PAECED PIKT	PEKT PECT PECKE PECD PECDE PEKD PEKDT PEET	PEAKED PEEKT PEKED PECED PEECT
9. stamp		S or ST	STP	SAP STAPT STAMS STAMT] STAMB	STAP SAMP
1. light		L	LT	LIT	LITE LIET LIGHET LIYT LIHT
2. seed		S or C	SEP	SED CED CEDE	SEAD SEDE
3. dragon		JRM	JRN DRAG	JRAGN DRAGN DRYGIN DAGN DREGEN	DRAGIN DRAGAN DRAGINE
4. stick			SAK	STEK STEC ST CETICK	STIC STIK
5. side		FLME	SIN	SID SIYD SIAD	SIED

APPENDIX H--<u>Continued</u>

SCORE KEY FOR DEVELOPMENTAL SPELLING TEST, cont.

6. feet	.		FOAT FYET	FET FEITR	FETE FEAT FEETE
7. bed		BEDAE	BAT BID	BAD	
8. gate			BAK	GAT	GAET GAYT GAITE
9. test			TST TIST	TAST TEIST TET TES TESAT	

(1)	(2)	(3)	(4)
Beginning Consonant only	Beginning and end consonant or Beginning consonant and vowel	Beg, end, appropriate vowel (A for e; E for I) Can omit 2nd consonant <u>Two-syllable words</u> Appropriate vowel in 1st Consonant in 2nd	Beg, end, correct vowel Attempt to mark long vowel <u>Two-syllable words</u> Correct short vowel or a marked long vowel in 1st A vowel in the 2nd

Appropriate sequences of letters is weighted heavily.

One point is deducted for letter reversals at the transitional or correct level.

*Whether to place this spelling as prephonetic or phonetic depends on the local dialect. In our area the short *e* and the long *a* are almost indistinguishable in sound in this particular word, even by an adult.

APPENDIX I

Evaluation of Word Workshop: Teacher #1

I. Strengths of the curriculum.
What did you like? Circle the letter to indicate the parts of the curriculum that you liked.
Why did you like it? Please write in comments.

a.   Introduction and explanation of the sounds
>   Helped students to focus on the sounds

b.   Acting out the sound
>   Aided many students in remembering the sound

c.   Words to dictate

d.   Sentences to read
>   I sometimes made overheads and students could find sounds, etc.

e.   Letter/sound response game

f.   Other games
>   The students loved the Word Game.

g.   Dictation

II.   Weaknesses of the curriculum.
What would/did you change? What would you add?
What lessons or parts of lessons need to be clarified? shortened? rearranged?

a.   Introduction and explanation of the sounds

b.   Acting out the sound
>   Sometimes the kids made up other actions that made more sense to the them.

c.   Words to dictate

d.   Sentences to read
>   Put on overheads.

e.   Letter/sound response game

f.   Other games

g.   Dictation
>   Often couldn't do both words to dictate and this dictation--not enough time in the day.
>   Sometimes did sounds as a warm up (on our white boards).

III.   Compatibility with curriculum
How did this program fit in with the regular curriculum?

Word Workshop was a very important component of my reading curriculum.

time-wise?
I spent about ¼ to ⅓ of reading time on Word Workshop.

content-wise?

I taught it separately from the MacMillan program but it always related to the stories and activities we were working on.

How often did you teach every component of the lesson? Put an X in the correct box.

	Every Lesson where indicated	Almost all Lessons	About ½ lessons	Often couldn't get to it
Introduction and explanation of the sounds	X			
Acting out the sound	X			
Words to spelling	X			
Sentences to read				X
Letter/sound response game			X	
Dictation				X

III.   Ease of teaching. Why did you enjoy or not enjoy teaching it? Please be VERY specific.

-The lesson plans were easy to follow.
-You could see that the students "got it," retained it and made a great deal of progress.
-I was wonderful to actually have the sounds (etc.) written out--what kids need to learn.

IV. **Suggestions for future teachers**
What suggestions would you make to teachers who may use this in the future?

Just to use it--it's great!

V. **Use of the curriculum.**
Would you use this curriculum again? Why or why not?

<u>Yes!</u> I feel very confident using this program. My students have really benefited.

VI. **Children's response**
What was their general attitude toward the curriculum?

They seemed to enjoy it. They never complained or said "not again!"

What effect do you feel it had in effect on their reading skills?

Strengthened their word attack skills.

writing skills?

Using "proper" spelling more consistently.

confidence in reading or writing?

All my students view themselves and readers and writers.

What effect did it have on the high achievers?

I feel it improved their spelling--They use the information we learned in their writing and reading.

the low achievers?

All the different ways the information was presented seemed to benefit the low achievers.

What kind of student feedback did you receive?
They were always relating what we learned in Word Workshop to other situations. We used white boards for building words and they loved it. They also loved to write <u>long</u> words and sentences.

VII.   Teacher training
What parts of the teacher training were most helpful?

> When we answered the questions on the index cards, I had "a zillion" aha's! It was very
> helpful!!

Now that you have taught the material, what do you wish you would have known at
the outset? What needs to be included in the teacher training that was not?

> I felt the training and manual were very user friendly.

VIII.   Parental feedback
What kind of parental feedback have you received concerning the program?

> Parents have commented that they feel the students have a very good phonics skills
> background and strong word attack skills.

IX.   Time
How much time did it take to teach each day?

> 15 minutes - 30 minutes

X.   Modifications for low achievers
What modifications did you make for children who were having difficulty keeping up
with the program?

> Most of my students were able to keep up with what we were doing. I spent extra time
> reviewing the short vowels and took longer at the very beginning of the long word lessons.

What impact do you feel the program had on them?

> I think that being exposed to the sound visually, auditorially, kinesthetically, and tacitly aided
> many of my lower students in remembering the sounds and understanding when to
> use them.

APPENDIX I--<u>Continued</u>

Evaluation of Word Workshop: Teacher #2

I.   Strengths of the curriculum.
What did you like? Circle the letter to indicate the parts of the curriculum that you liked.   Why did you like it? Please write in comments.

a.   Introduction and explanation of the sounds
   I liked the explanations for how the sounds were produced--easy to understand and relate to the children--tells just how to form the mouth and tongue.

b.   Acting out the sound: Good to use an action--"doing" helps to remember.

c.   Words to dictate
   I really like to use word families; rhyming. The appendix was a great help.

d.   Sentences to read
   I needed to be better prepared with these--perhaps I could write them ahead of time on strips or a tablet.

e.   Letter/sound response game
   Simple, but the children enjoyed it. The kids were able to rubber band and sort cards for themselves. Color coding the cards was great!

f.   Other games: The kids enjoy working in groups or with partners making words.

g.   Dictation
   It's important that the kids correct their mistakes so they don' make it a habit of repeating them. The children felt good about correcting their own work and learned from doing it.

II.   Weaknesses of the curriculum.
What would/did you change? What would you add?
What lessons or parts of lessons need to be clarified? shortened? rearranged?

a.   Introduction and explanation of the sounds
   I needed to teach a few lessons at earlier times because the children were reading or writing the words sooner (ex: ow,ay).

b.   Acting out the sound
   I would let the children sometimes give their suggestions and help decide on the action.

c..   Words to dictate
   I didn't find the appendix soon enough! It was a great help in planning lessons.

d.   Sentences to read
   I would write these ahead of time to be better prepared (I made this more difficult than it really was).

e.   Letter/sound response game: Easy to follow and use

f.   Other games
   We played musical spelling, spelling tic,tac,toe; the children would take turns being the teacher; we would make step by step drawings and write the rhyming words on the picture (made cow: wrote words from #88)

g.   Dictation: I liked knowing the principles so I could give the kids clues when dictating.

APPENDIX I--<u>Continued</u>

III. **Compatibility with curriculum**

How did this program fit in with the regular curriculum?

I was a little apprehensive about the program at first because I wasn't sure if I could give it enough time since we were beginning a new reading series, too.

The program fit in very well because my philosophy is similar (rhyming, word families, writing & reading together).

time-wise?

content-wise?

How often did you teach every component of the lesson? Put an X in the correct box.

	Every Lesson where indicated	Almost all Lessons	About ½ lessons	Often couldn't get to it
Introduction and explanation of the sounds	X			
Acting out the sound		X		
Words to spelling	X			
Sentences to read			X	I didn't always use the same sentences that were suggested.
Letter/sound response game		X		
Dictation		X		

III. **Ease of teaching**. Why did you enjoy or not enjoy teaching it? Please be VERY specific.

It really helped the children be more successful with writing and reading skills. The children could spell words correctly sooner than with other programs I've used.

A substitute could follow the program in my absence due to the clarity.

I enjoyed teaching it because the results were so good. My philosophy is similar to the author's so I didn't have to be persuaded to use it.

APPENDIX I--<u>Continued</u>

IV. **Suggestions for future teachers**
What suggestions would you make to teachers who may use this in the future?

Give it a chance! Adjust the pace as needed but do something from it every day.

V. **Use of the curriculum.**
Would you use this curriculum again? Why or why not?

Absolutely---it works!

VI. **Children's response**
What was their general attitude toward the curriculum?
The children liked the program. I varied the ways in which words were made--on paper, word cards, rubber letters, chalkboards, whiteboard! The children liked the variety and were interested in why words were spelled certain ways.

What effect do you feel it had in effect on their reading skills?
Easier to sound out words--knew long vowel and short vowel differences, endings, etc. -- used context clues more effectively.

writing skills?
Much more accurate with spelling, would try on their own more.

confidence in reading or writing?
Writing and reading do go together--kids are wanting to try sounding out, reading and writing new words.

What effect did it have on the high achievers?
Fabulous! They were always excited to learn a new principle and were eager to spell "correctly." They really took off in reading, too.

the low achievers?
Some of these children were better in spelling than other subjects--I was glad they felt successful in this area.

What kind of student feedback did you receive?
The testing was "fun." "When do we get to go with the lady again?" I

VII. **Teacher training**

What parts of the teacher training were most helpful?

Modeling the lessons, meeting to share ideas, supporting each other.

Now that you have taught the material, what do you wish you would have known at the outset? What needs to be included in the teacher training that was not?

You did a nice job in preparing us. I need to make my own charts to remind me of principles--it wouldn't hurt to post them in the room.

VIII. **Parental feedback**

What kind of parental feedback have you received concerning the program?

I have a twin and her sister is in a 1st grade not using this program--their parents commented on how much my child shared with her sister. The "teacher parents' have really been impressed with their children's successes and frequently make positive comments.

IX. **Time**

How much time did it take to teach each day?

It varied--some days I would spend an hour and other days might have been 30 minutes. I was able to combine a few lessons in the beginning, but spent more time with later lessons.

X. **Modifications for low achievers**

What modifications did you make for children who were having difficulty keeping up with the program?

I kept all the children (except Special Education) together for the lessons. During small group time, I would review more with the lower achievers.

What impact do you feel the program had on them?

They have picked up many skills just be being exposed to them. I often think that these children are not given the same opportunities because we don't think they are ready or capable. Practice and higher expectations was good for all the children using this program.

Evaluation of Word Workshop: Teacher #3

I. **Strengths of the curriculum.**
What did you like? Circle the letter to indicate the parts of the curriculum that you liked. Why did you like it? Please write in comments.

a. Introduction and explanation of the sounds

   This helps students to become more aware of the sounds and how they are formed.

b. Acting out the sound

   The children had fun acting out the sounds. It was great to use for the students that have a difficult time remembering sounds.

c. Words to dictate

   Challenging words!

d. Sentences to read

e. Letter/sound response game

   All students are actively involved! This activity moves quickly!

f. Other games

g. Dictation

   Students have the chance to apply skills that were first taught. Skills taught previously are often part of the dictation also.

II. **Weaknesses of the curriculum.**
What would/did you change? What would you add?
What lessons or parts of lessons need to be clarified? shortened? rearranged?

a. Introduction and explanation of the sounds

b. Acting out the sound

   Some of the sounds to be acted out were difficult for the children to picture or relate to.

c. Words to dictate

d. Sentences to read

e. Letter/sound response game

f. Other games

g. Dictation

APPENDIX I--<u>Continued</u>

III. **Compatibility with curriculum**
How did this program fit in with the regular curriculum?

time-wise?
> The time that it takes to teach each lesson is well worth it because a lot of different skills are being practiced and meeting the needs of all the children.

content-wise?
> Just fine!

How often did you teach every component of the lesson? Put an X in the correct box.

	Every Lesson where indicated	Almost all Lessons	About ½ lessons	Often couldn't get to it
Introduction and explanation of the sounds	X			
Acting out the sound	X			
Words to spelling	X			
Sentences to read		X		
Letter/sound response game		X		
Dictation		X		

III. **Ease of teaching.** Why did you enjoy or not enjoy teaching it? Please be VERY specific.
> I really enjoyed the consistency of each lesson.
> I was concerned at first about organizing the letter cards and having it take too long to pass them out, etc., but the way you had us organize them in the baggies worked. Excellent!
>
> I enjoyed teaching Word Workshop because the students were so successful.
> Studies have shown that short intense periods are best--Word Workshop lessons are structured like this!

IV.   Suggestions for future teachers

What suggestions would you make to teachers who may use this in the future?

> Allow yourself to be you as you teach each lesson. At first I was following your words too closely and I felt awkward. I did this because I didn't want to mess up your study. Once I relaxed I enjoyed it more.

V.   Use of the curriculum.

Would you use this curriculum again? Why or why not?

> Yes, I plan to use the Word Workshop again. I like the:

1. structure
2. consistency
3. hands-on
4. gentle, relaxed atmosphere
5. all students can succeed!!

VI.   Children's response

What was their general attitude toward the curriculum?

> They loved the letter cards, acting out the sounds and dictation.
>
> <u>Very positive!</u> They loved the Find and Show game. We had a lot of fun making up our own actions for some of the sounds.

What effect do you feel it had in effect on their reading skills?

> This is difficult to answer because we also have a new reading series this year that I feel is very good. I can't say that the children are ahead of where there have been in past years but I can say that getting to this point was less painful than in the past.

writing skills?

> I am amazed with their writing skills. The children seems more confidenct to sound out the words on their own. I love how many of th estudents are using ing, ed, s, es, ink and some contractions.

confidence in reading or writing?

What effect did it have on the high achievers?

> I think they felt challenged! They remembered some of the word spellings better than I could!!

the low achievers?

> -felt successful
> -increased confidence

What kind of student feedback did you receive?

> -Some enjoyed the dictation most
> -Some like the letter/sound response game most.

VII.   Teacher training
What parts of the teacher training were most helpful?

It was helpful for me when Roxie went through several lessons with her as the teacher and we were the students.

Now that you have taught the material, what do you wish you would have known at the outset? What needs to be included in the teacher training that was not?

I think it's difficult to include too much in the teacher training because a lot of the questions I had didn't appear until after I started using the program. You have to be open-minded and if some part of the program isn't working for you then you need to change it to fit your style.

VIII.   Parental feedback
What kind of parental feedback have you received concerning the program?

A parent that helps in my classroom an average of 3 days a week is impressed with the words the children can spell, the words they are able to sound out, and the rules they know. She mentioned that her son in my room often helps his older sister with spelling and rules.

IX.   Time
How much time did it take to teach each day?

When I began the program it was taking about 40 minutes. As I became more familiar with the program, each lesson took about 15 to 20 minutes.

X.   Modifications for low achievers
What modifications did you make for children who were having difficulty keeping up with the program?

In the beginning I had several of my students (4) skip the dictation and we did more with the letter cards. then I had them do dictation but we did it together.

What impact do you feel the program had on them?

I think they felt just as successful as the other students.