A LOOK AT DEVELOPMENTAL WORD STUDY

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A LOOK AT DEVELOPMENTAL WORD STUDY

A Thesis

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Abstract

of

A LOOK AT DEVELOPMENTAL WORD STUDY

by

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Statement of the Problem

Traditionally, English orthography is viewed as an irregular system and spelling instruction consists of rote memorization of words. However, it is widely acknowledged that our spelling system is indeed regular and children benefit from studying these regular patterns. Additionally, spelling does not need to be taught separately, as there is a strong relationship between reading and spelling. Word study is an approach to spelling instruction that educators can use to help children develop a deeper understanding of English orthography. Studying words helps children make generalizations that they can apply to the reading and spelling of new words.

Sources of Data

Students in two second-grade classrooms in the Sacramento area were given pre and post assessments in both spelling and phonics. The treatment class received six weeks of supplemental differentiated word study instruction. The treatment group's assessment gains were compared with the control group gains. In addition, a
descriptive analysis was conducted with the treatment group to provide a more holistic view of word study in the classroom.

Conclusions Reached

While an analysis of variance failed to show that students in the treatment group scored significantly differently than students in the control group, both groups did make significantly higher posttest gains on both spelling and phonics measures when looked at separately. However, an analysis of magnitude produced evidence that supplemental differentiated word study had a greater impact on learning than did the basal reading program used alone. Additionally, observational and interview data indicated high levels of student motivations and engagement in word study.

________________________, Committee Chair
Terry Underwood, Ph.D.

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Date
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Chapter 1

INTRODUCTION

Researchers have long been interested in examining methods for promoting growth in spelling development among children in the primary grades (Templeton, 1992). Much of this research has focused on discerning stages of development with a concurrent focus on how to support student improvement within and across these stages. This research project fits within this tradition. The intent of the research was to look at ways in which a developmental approach to spelling instruction, called "word study", not only impacted primary grade student spelling development, but phonics development as well, when implemented in small groups.

Statement of the Problem

Literacy instruction is an important focus in the primary grades. Although there is not an established sequence to teach phonics and word recognition strategies, school classrooms share some general characteristics. Kindergarten teachers typically teach both phonics and phonemic awareness. Generally, kindergarten students learn letter names and sounds and initial and final consonants in words. First grade reading programs usually include spelling in addition to phonics and phonemic awareness. First graders typically learn the short vowel word pattern in simple words (Consonant-Vowel-Consonant), the common long vowel pattern of final -e, and consonant blends and diagraphs. During the second half of first grade students learn additional long vowel patterns and other vowel diagraphs. Second graders review the vowel and consonant patterns learned in first grade and are expected to increase their
automaticity in word recognition and fluency rate. In California, second-grade students are expected to recognize and spell diphthongs (ou/ow, oi/oy), r-controlled and other vowel diagraphs in addition to basic short and long vowel patterns and develop decoding fluency in texts containing these patterns by the end of the year (California State Board of Education, 1998).

The vowel patterns of the English language are quite extensive (Bear, Invernizzi, Templeton, & Johnston, 2008). Second graders are faced with many complexities as they transition from the alphabetic layer to the pattern layer of word recognition. For example, students in the pattern stage study long-vowel patterns such as the long -a pattern. Since there are multiple ways to spell long -a (a-consonant-e as in *take*, ai as in *pain*, and ay as in *play*), such variation makes learning difficult. Other vowel diagraphs, *oi/oy* and *ou/ow*, are the most complicated for children to learn because their sound is neither short nor long (Bear et al., 2008). These vowel diagraphs are also spelled in a multitude of ways (although *ouch* and *owl* are spelled differently, they share the same vowel sound). Children need to master these complex spelling matters in order to build automatic word recognition and become fluent readers. It is important that children are able to automatically recognize words and read fluently, because decoding and comprehension compete for short-term memory capacity (Pressley, 2006).

In many classrooms spelling is taught as a separate subject. Spelling instruction typically consists of rote memorization of words, where each week students are given a list of words to copy repeatedly, write in sentences, and look up
dictionary definitions. However, the reading and spelling of words are closely related (Ehri, 2000), and spelling instruction can occur productively in the context of reading instruction. In fact, The Reading/ Language Arts Framework for California Public Schools (California State Board of Education, 2007) suggests that classroom instruction in second grade connect decoding and spelling. Word study is an approach to spelling instruction that helps children develop a deeper understanding of English orthography and may solve the problem of spelling instruction carried out in isolation, which does not capitalize on the inherent overlaps between reading and spelling. By comparing and contrasting words, children make generalizations that they can apply to the reading and spelling of unknown words (Bear, et al., 2008).

**Rationale**

Because the word study approach is known to strengthen student's literacy by connecting spelling and decoding, inquiry into how the approach can be best implemented in classrooms is needed.

This study will help determine if supplemental developmental word study, in addition to the regular basal reading program increases the spelling and phonics development of second graders. It is expected that this study will show that the word study approach will bring about higher spelling and phonics achievement scores than using the basal reading program alone. In addition, the practical nature of implementing word study in a second grade classroom will be explored.
Methodology

This study took place in a second grade classroom in a low socio economic status school in the Sacramento area. Each student in the class received differentiated word study instruction in a small group. Intervention consisted of studying words through researcher-directed word sorts and independent sorting and activities, such as games.

In this mixed methods study, data was collected through a variety of ways. A qualitative spelling assessment was administered to the whole class, and a phonics assessment was administered individually. The spelling assessment used was the Qualitative Primary Spelling Inventory (Bear et al., 2008). The Basic Phonics Skills Test- III (Shefelbine, 2007) was used as the phonics assessment. Pre and post tests were analyzed against a control group to measure gains made as a consequence of the intervention. In addition, anecdotal notes were taken during the treatment period and student interview were conducted post-treatment to document spelling development, meta-cognition, and motivation in students.

Definition of Terms

The following definitions describe important terminology that is related to this study:

*Alphabetic principle:* the concept that letters are used to represent sounds

*Automaticity:* the speed and accuracy of word recognition

*Consonant blends:* two or more consonants grouped together in which each consonant retains its original sound, such as *sm*
**Diagraphs:** letter combinations that represent a different sound than one made by combining the sounds of each individual letter, such as *ch*.

**Diphthongs:** two vowel combinations that form a new sound, such as *oi*/*oy* and *ow*/*ou*.

**Differentiated instruction:** targeting instruction to match the needs of a student.

**Grapheme:** symbol representing sound.

**Morpheme:** smallest meaningful unit of sound.

**Orthography:** the spelling system of a language.

**Phoneme:** smallest unit of sound.

**Phonics:** the relationship between letters and sounds.

**Word study:** a learner-centered, conceptual approach to instruction in phonics, spelling, word recognition, and vocabulary (Bear et al., 2008).

**Limitations and Delimitations of the Research**

The validity of the results of this study was influenced by limitations beyond the researcher's control. One limitation was the sample size was confined to a small number of students. Student attendance may have also affected treatment effects. Additionally, the teacher of the classroom had final control over the schedule. There were several times that word study was canceled or students were not able to complete word study activities at the independent station during the workshop block due to the teacher's needs or a change in the school schedule.

A delimitation, which affects the generalizability of the study, was that certain students received additional reading intervention several days a week, either with the
classroom teacher after-school or a certified teacher for pull-out tutoring during the
day, which may have interfered with the results of treatment. Another delimitation that
may affect generalizability was that there were three adults in the classroom managing
the workshop block word study was a part of during the study- the researcher,
classroom teacher, and a student teacher.

Organization of Thesis

Chapter 1 provided background information on the word learning that takes
place in a second grade classroom. An introduction into word study and research
methods was explained. Chapter 2 contains a review of the literature related to the
current study. This review includes an examination of the research on the historical
views on orthography. It also examines the differences between traditional and
developmental approaches to spelling instruction and the connection between spelling
and reading instruction. Chapter 3 presents the methodology of the research study.
Participants, assessment, and procedures are provided in detail. Chapter 4 details the
results of the data analysis. Finally, Chapter 5 provides a discussion of the research
results and implications for classroom instruction.
Chapter 2

REVIEW OF THE LITERATURE

In order to ground the study of a developmental approach to spelling instruction this chapter begins with a review of the literature in the field of spelling. It discusses the historical views of orthography and reviews traditional spelling and development spelling instruction. The relationship between spelling and reading is explored. The chapter concludes with a review of the word study approach to spelling instruction.

Spelling

Traditional Instruction

Traditionally, spelling has been taught as a skill of rote memorization, not as a developmental process. This view is based on the belief that the English language is without pattern and is inconsistent (Treiman, 1993). Children are supplied a list of words to memorize and master, regardless of their reading level. Spelling is treated as a separate subject from reading and writing.

Early researchers Webster and Horn believed that English spelling was totally illogical (Templeton, 1992). Webster even went so far as to change the spelling of some words in the Webster's Dictionary (Templeton, 1992). This way of thinking influenced spelling instruction in school. Consequently, spelling education in the mid-eighteenth century was quite similar to what is still found in many classrooms today. Students recite new spelling words, write them multiple times, alphabetize them, and
write them in sentences. The teacher quizzes students each week on their mastery of the list.

**Historical Views on Orthography**

While the English spelling system, or orthography, is complex, it is actually fairly consistent (Templeton & Morris, 2000). In the early 20th century, when Webster and other scholars were arguing for a reformed spelling system, Bradley, an editor for the Oxford Dictionary, disagreed. He believed the function of written language was not only to represent sound but meaning as well (Templeton & Morris, 2000; Treiman, 1993). Meaning is important to the orthography of the English language, since many polysyllabic words are of Latin and Greek origin (Bear et al., 2008).

In the 1950s, the Stanford studies challenged the rote memorization position (Nelson, 1989). The studies consisted of programming a computer with spelling rules and testing the computer's knowledge of over 17,000 words. This research established that our spelling system consisted of more letter-sound regularities than was previously thought (Templeton, 1992).

Linguists Chomsky and Halle (1968) further asserted the notion that our orthographic system is regular. Chomsky and Halle developed the Phonological Theory (Henderson, 1981). They proposed that the "spelling of a word corresponds quite closely to the representation of that word in the speaker's underlying mental lexicon" (Templeton & Morris, 2000, p. 526). Therefore, phonetic representations of words are obtained from their underlying morphemic representations. This indicates that words related in meaning can also be related in spelling, even if the sound
changes, such as in compete, competition, and competitive (Templeton & Morris, 2000).

Venezky's work also emphasized the meaning, or morphemic layer, of English orthography and its "predominant role in determining the spelling and the pronunciation of individual phonemes" (Templeton & Morris, 2000, p. 527). While Chomsky's and Halle's phonological theory focused on how a speaker arrives at spelling from the meaning it represents, Venezky asserted that there are rules that create a link between phonemes and sound (Henderson, 1981). Both models concluded that English orthography is more regular than it appears.

Read's studies of invented spellings were influenced by Chomsky and Halle's theory (Templeton, 1992). Read discovered that preschoolers without any formal training attempted to symbolize the sounds in words when they invented spellings. Instead of memorizing strings of letters, children invented ways to represent sounds. Read found that errors offered insight into a child's linguistic knowledge and were found to be logical (Treiman, 1998).

**Developmental Spelling-Principles, Evolution, & Stages**

The research of the late-twentieth century led to the belief that children move through "a common developmental sequence of acquisition of orthographic knowledge" (Templeton & Morris, 2000, p. 531). Stage theories were the leading approach to explain developmental spelling. Stage models described learners underlying word knowledge at points along a continuum (Templeton & Morris, 2000).
Henderson and his students at the University of Virginia originally proposed five stages of spelling development (Nelson, 1989), ordered within three layers or principles—alphabetic, within-word pattern, and meaning (Bear et al., 2008; Henderson & Templeton, 1986). These layers build upon and interact with one another.

According to the alphabetic principle, letters represent sounds. Sometimes sounds are represented by single letters and other times by pairs, such as *ch* or triads, such as *tch*. This principle was established by Anglo-Saxons during the time of Old English. Old English spellings had a more direct letter-sound correspondence than they do today due to influences from other languages and attempts to reform English spelling (Henderson & Templeton, 1986).

The pattern layer of English orthography represents the correspondence between sound and groupings of letters. Final -e is an example of a within-word pattern. The e at the end of a word signals that the first vowel is long. This is referred to as the consonant-vowel-consonant-silent e pattern (CVCe). These patterns originated after the Norman conquest of 1066 and French influenced the English language (Bear et al., 2008).

The last layer is the meaning, or morphemic, principle. This principle asserts that words or units with a similar meaning are spelled the same way, despite their pronunciation, such as *sign* and *signature*. Greek roots and Latin stems are examples of words and word parts that originated during the Renaissance and influenced the English language (Bear et al., 2008). Affixes are also examples of morphemic units.
Although Henderson and his colleagues first proposed five stages of spelling development, the labels and descriptions have been refined over the years. Currently there are six stages of orthographic knowledge described by Henderson (Bear et al., 2008).

The first stage that preliterate children enter into is that of *Emergent Spelling*. This phase typically describes children 0 to 5 years old, who have yet to be exposed to formal reading instruction. Children initially produce scribbles then move on to pretend writing. Pretend writing is usually linear and, according to a child, represents a word or words, although the marks still look like scribbles. By the end of this stage children use letters, especially the letters in their names, and have memorized a few written words.

The second phase is the *Letter Name-Alphabetic* stage. This stage primarily represents children in kindergarten through the middle of second grade, and is therefore relevant to the current study. It consists of students using letter names to represent sounds, such as using *y* to spell *w*, because the first sound of the letter name *y* is pronounced */weɪ/*. Early in this stage a child uses consonants, often the first and last consonant sounds of a word, and might spell the word *what* as *YT*. In the second half of this stage, children use vowels, in addition to consonants, to spell. They also segment sounds in consonant blends, such as *gr* and *ch*. By the end of the letter name-alphabetic stage, many students are able to spell words with short-vowels, diagraphs, and consonant blends correctly. These spellers normally omit preconsonantal nasals,
such as the *m* in *bum*. Students enter the next phase when they are able to spell these correctly.

*Within Word Pattern Spelling* is the third, and longest, spelling stage. This stage is also relevant to the current study. It starts as children begin to read independently, typically at the end of first grade, and lasts until about ten years of age. These spellers not only spell the common long vowel pattern of CVCe correctly, but also use other long vowel patterns to spell words. Since there are so many long vowel patterns in addition to diphthongs, such as *ou/ow* and *oi/oy*, students may confuse the patterns until they reach mastery. For example, a child may spell the word *train* as *trane*. This demonstrates that they are using, but confusing, long vowel patterns.

The next phase, *Syllables and Affixes*, most often begins in third grade and lasts through middle school. This spelling stage includes syllable juncture patterns, such as open and closed syllables. A syllable is open when it ends with a vowel, which indicates a long vowel sound. A syllable is closed when it ends with a consonant, which indicates a short vowel sound. Students in this stage also need to understand accented and unaccented syllables and use inflected endings, such as *ing* and *ed*. By the end of this stage students spell prefixes and suffixes that change the meaning of words.

*Derivational Relations Spelling* is the final stage. This stage typically starts in middle school and last throughout adulthood. These spellers are aware of how the meaning of base and root words, of Greek and Latin origin, affects the spelling of words. For example, *favorite* may be misspelled as *faverite* unless one is aware of the
relationships of *favor* to *favorite*. Many other errors made in this stage involve the schwa sound in unaccented syllables, such as in the second syllable of *imposition*. A person who knows this word is related to *impose* would be more likely to spell it correctly.

**Spelling and Reading Relationship**

Many researchers now agree that there is a strong relationship between spelling and reading development (Morris & Templeton, 2000). According to Morris and Templeton (2000), the spelling and decoding of words share a common orthographic base. This knowledge of both spelling and reading processes develops together.

Ehri (2000) described reading and spelling as "two sides of a coin in that they both rely on the same knowledge sources in memory: knowledge about the alphabetic system and knowledge about the spellings of specific words" (p. 33). In their experimental research studying kindergarteners, Ehri and Wilce (1987) examined the effects of teaching children to spell words on their reading of words. Students received individual spelling training, lasting between 15-40 minutes, over 7-18 sessions. The researchers found that the experimental spelling group surpassed the control in a reading task, in which students read words containing spelling patterns that they had studied. Success was attributed to "working knowledge of the alphabetic system" (Ehri, 2000, p. 31), as a result of teaching students the phonetic spellings of words.

Uhry and Shepherd (1993) reported similar outcomes with first graders. Students in an experimental group were trained in segmenting and spelling twice a week over a six-month period. The experimental group made considerable gains over
the control in reading tasks, involving reading real and nonsense words and oral passages. Morris and Perney (1984) studied four first-grade classrooms over a school year. They discovered that invented spelling was a good predictor of end of the year general reading achievement, including word recognition and comprehension. Juel, Griffith, and Gough (1986) collected longitudinal data from students in the first and second grade years of school. They also reported a strong relationship between word recognition and spelling.

**Word Study**

Evidence supports using spelling instruction to enhance literacy development. Word study is a systematic approach to spelling that gives children a deeper understanding of English orthography. By comparing and contrasting words, students make generalizations that they can apply to the reading of unknown words (Bear et al., 2008). It is critical that children learn to automatically recognize words and read fluently, because decoding and comprehension compete for short-term memory capacity. According to Bear et al. (2008), word study is important to help students focus their attention on making meaning, which is the purpose of reading.

Word study is developmental. Students in one class have multiple needs and traditional whole-class spelling instruction is inadequate to meet these needs. By examining students' invented spellings, instruction can match what spelling features a child "uses but confuses" (Bear et al., 2008, p. 21). This element is based on Vygotsky's zone of proximal development (1986). Targeting this zone for instruction builds on what students already know and moves forward with teacher guidance.
Instruction is neither too easy nor too hard. The teacher works with children in differentiated small group instruction.

Word study is also an active and engaging process. While there are many games and activities to extend learning and motivate students, the main activity of word study is sorting words (Bear et al., 2008). Primary students compare and contrast words by categorizing them according to specific sounds and spelling features. With the assistance of a teacher, children have the opportunity to discover word features and make generalizations on their own. Sorting words is not simply a process of rote memorization, but a process of exploration where students use critical thinking while categorizing and manipulating words.

**Conclusion**

This review of the literature discussed two different approaches to spelling—traditional and developmental. Traditionalists believe that English orthography is irregular and therefore only memorization of words leads to successful spelling. However, beginning in the early 20th century, scholars argued that our spelling system was indeed regular. When all three layers are considered - sounds, patterns, and meaning, English orthography is logical. This belief led to the development of spelling stages, which children move through on a continuum. Word study investigates spelling attempts to determine the developmental spelling stage a student falls into. Through word study students do not just memorize words but compare and contrast them. This process helps students make generalizations to assist in not only spelling new words but reading them as well. As the literature review demonstrated, there is a strong
relationship between reading and spelling and word study helps to make this connection.
Chapter 3

METHODOLOGY

This chapter discusses the methodology of this study which examined the effects of differentiated supplemental word study on the spelling and phonics development of second-graders. It also explored what could be learned of a practical nature from implementing word study in the classroom.

To address these questions the researcher chose to implement a descriptive study using qualitative methods to measure student learning. Treatment procedures and participants are also described in this chapter.

Sample Population

The study took place in a second-grade classroom in a Title I funded elementary school in the Sacramento area. Seventy-four percent of students at this school were socio-economically disadvantaged, as defined by the number of students participating in the free or reduced-price lunch program. The total population for the 2009-2010 school year was 457 students. The majority of the student population was ethnic minorities. Forty-one percent were Latino and 32% were African American or black. Eleven percent was Caucasian. Six percent were Asian. The remaining percent were Pacific Islander, American Indian or Alaskan Native, and mixed race students. Seventeen percent of the population was English Learners. Figure 1 illustrates school ethnicity percentages.
The class that was studied was one of two second grade classes in the school. The class was made up of 21 students, 12 of whom were boys and nine of whom were girls. Eighty-five percent qualified for the free lunch program and 14% more received reduced cost lunch. Forty-eight percent were Latino, 38% were African American or black, and 14% were Caucasian. Figure 2 illustrates class ethnicity percentages. Twenty-four percent were English Language Learners, whose primary language spoken at home was not English. Figure 3 indicates the level of proficiency on the Language Arts portion of the school-wide benchmark assessment taken in the fall of 2010, prior to the start of the current study.

*Figure 1. School Enrollment by Ethnicity.*
Figure 2. Treatment Class Ethnicity Profile.

Figure 3. Treatment Class Language Arts Proficiency Fall 2010.
The control class, which was administered the spelling inventory and the phonics assessment, was composed of 23 students, 12 of whom were boys and 11 of whom were girls. Sixty-five percent of students qualify for free lunch and 30% more received reduced lunch. Forty-eight percent were Latino, 43% were African American or black, and 9% were Caucasian or Pacific Islander. Figure 4 illustrates class ethnicity percentages. Twenty-two percent were English Learners. Figure 5 indicates the level of proficiency on the Language Arts portion of the school-wide benchmark test taken in the fall of 2010.

Figure 4. Control Class Ethnicity Profile.
Data Collection

Data collection began in December 2010 and continued throughout the six-week intervention period. It was completed with student interviews in March 2011. To characterize student spelling attempts the Qualitative Primary Spelling Inventory (Bear et al., 2008) was administered as a pre and post assessment. The Basic Phonics Skills Test III (Shefelbine, 2007) was used to assess student's knowledge of phonics skills. The researcher also videotaped lessons and kept a written record of field notes to capture aspects of learning and motivation for further analyzing. Student interviews were conducted after the intervention period to document student's attitudes about word study and its effects on their spelling and reading.
Primary Spelling Inventory

The Primary Spelling Inventory (PSI) was developed by Bear et al. (2008) to assess student's word knowledge of key spelling features. The features are found in the emergent stage through the early syllables and affixes stage (see Appendix A for the word list). It begins with simple CVC words (pet) and finishes with inflected endings (shopping). The results of the assessment provides qualitative information regarding what students know about certain spelling features and what they are ready to study. Every student was placed in a small learning group based on their developmental spelling stage designated by the results of the PSI (see the Feature Guide in Appendix B). All second-grade students in the study were administered the PSI as a whole class by the researcher in December of 2010 and March of 2011.

BPST III

The Basic Phonics Skills Test III (Shefelbine, 2007), was used to assess student's decoding skills on a broad range of phonics features. Students were first assessed on consonant sounds and names and short vowel sounds (see Appendix C). Then they read words with nine different patterns, beginning with CVC words and ending with affixes. Additionally, students read 2- and 3- polysyllabic words. All second-grade students were administered the BPST III individually by the researcher in December of 2010 and March of 2011.

Observations

After the pre assessment data was collected, written field notes were taken during the treatment. The intervention was also videotaped to allow for additional note
taking. Observations documented the practical nature of implementing word study in the classroom. Observations documented changes seen in student spelling attempts over the six week period. Observations also answered questions about student metacognition and motivation. The researcher looked for behavior and comments that demonstrated whether or not students were gaining a greater awareness of word knowledge and if they were eager to participate in the activities.

**Student Interviews**

The purpose of the post-treatment student interviews was to document students' attitudes and perceptions about word study. The researcher chose to implement a general interview guide approach with each of the three differentiated groups. The guide approach is a structured yet flexible way to conduct interviews with research participants. It ensures that general information is covered during the interview and allows the researcher to pose follow-up or probing questions based on the participants' responses.

**Treatment Group**

**Routines**

Before the intervention began, the researcher led eight whole class word study introductory mini-lessons that took between 20 and 30 minutes during the month of December 2010. These lessons were relatively easy and enabled students to become familiar with the routines for word study. Many ideas for the introductory lessons, as well as the treatment lessons and activities, came from the book *Words Their Way* (Bear et al., 2008).
Students were introduced to a concept sorts involving pictures for the first five lessons. First, the researcher modeled sorting pictures into two categories—children and animals, and then into two additional subcategories—babies and older children. Students participated and discussion about the categories took place during sorting. After a couple of lessons, students completed their own picture sorts with different categories independently at their desks. The whole class reviewed and discussed what each group had in common.

On day four students were given a sheet of paper with pictures to cut and sort. They were also given different color crayons, to scribble on the backside of their paper. This ensures easy identification of words that are lost on the floor. Students cut and sorted while the researcher and classroom teacher circulated around the room.

Students were worked with rhyming word sorts during the next two lessons, following the same procedures as the picture sorts. The researcher demonstrated, students participated as a whole class, and finally each student received their own complete sheet of rhyming words and were able to practice coloring, cutting, and sorting rhyming words on their own. Students were also familiarized with doing a blind sort with the rhyming words. Blind sorts involve calling out each word without showing it, as the printed word can sometimes give the category away. Students also copied the sorted words and the sentences in a word study notebook.

Students were introduced to a word study game for the seventh mini-lesson. The researcher used the Racetrack game found in Chapter six of *Words Their Way* (Bear et al., 2008) with the word families -ad, -an, and -at. The Racetrack game was a
good choice to practice with as it can be used for any spelling pattern, such as different vowel patterns. The researcher and classroom teacher circulated as students practiced this game.

During the final introductory lesson, students were divided into their three differentiated word study groups to review the workshop routine. Students practiced quietly getting into groups and moving from one to station to another, indicated by the ringing of a bell, in an orderly fashion.

**Procedures**

Second-grade students in a self-contained classroom participated in this study for 13 sessions over a period of six weeks. The experimental group received word study instruction from the researcher in addition to the regular basal reading program instruction led by the classroom teacher. The basal reading program adopted by the district is *Open Court*, developed by SRA/McGraw-Hill. Word study methods were meant to enhance the existing reading curriculum by providing small group differentiated word study along with the basal reading program.

Teachers at the school need to spend 150 minutes a day on reading instruction. The classroom teacher in the experimental group allowed the researcher to incorporate word study methods into the reading block. Intervention took place during a one hour "workshop" block two or three times a week. The last week there was only one session due to the classroom teacher's schedule. Students were organized into three instructional groups based on their results on the Primary Spelling Inventory. Groups rotated through a word study- independent/extension- *Open Court* routine. Each group
received 20 minutes of researcher-directed instruction during the workshop station. During the independent/extension station students either played a game using the words and word patterns they had studied at the word study station or did journal writing and other writing work assigned by the classroom teacher. Students worked on the Open Court comprehension curriculum led by the classroom teacher during the third station. Normally, the class participates in these exercises as a whole class. However, the teacher took the opportunity to work with small groups during the course of this study. Table 1 shows the hour-long block schedule that was used.

Table 1

*Workshop Block Schedule*

<table>
<thead>
<tr>
<th></th>
<th>9:00-9:20</th>
<th>9:20-9:40</th>
<th>9:40-10:00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td>Word Study</td>
<td>Extension</td>
<td>Open Court</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td>Open Court</td>
<td>Word Study</td>
<td>Extension</td>
</tr>
<tr>
<td><strong>Group C</strong></td>
<td>Extension</td>
<td>Open Court</td>
<td>Word Study</td>
</tr>
</tbody>
</table>

The book *Words Their Way* by Bear et al. (2008) was used as a guide for the intervention activities and procedures. Direct instruction consisted of word sorting and related activities. Students categorized words by sound and patterns.

The researcher introduced new word sorts each week by reviewing the words together and discussing any unclear meanings. Next, the researcher demonstrated the sorting activity by establishing the categories, either by sound or pattern. Students
were asked questions after reading all words, such as, "What do you notice about these words?" and "How might we sort these words?" Students would offer ideas and the researcher would use key words as headers. The researcher would add a few words under the headers and elicit children's ideas about what other words to include. Students would then take over the task and categorize the rest of the words with each other. Teacher-led discussion took place during and after the sorts about the characteristics of each different category of words.

On a subsequent day, the sort would be reviewed either in the same manner as the previous day, or as a blind sort, where the researcher called out the words without showing them and students decided which category the words belonged. Then students received their own list of words, which they colored, cut out, and sorted independently or with a partner, but with guidance from the researcher. Those students who had time wrote the words into categories in their word study notebook.

New word study games were also introduced for students to apply what they learned in a new and motivating activity. During independent/extension time students played the game in pairs or triads.

When time permitted, the researcher conducted writing sorts. First, students copied key words given by the teacher to label each category. Then the researcher called out words from the word sort that was practiced that week for students to write under the appropriate heading.
Differentiated Groups

There were three differentiated groups created from the Primary Spelling Inventory. One group of students was in the second stage of spelling development and the other two groups were in the third stage. The words used for the sorting activities came from two of the companion books for *Words Their Way* (Bear et al., 2008)-*Word Sort for Letter Name- Alphabetic Spellers* (Johnston, Bear, Invernizzi,& Templeton, 2009) and *Word Sorts for Within Word Pattern Spellers* (Ivernizzi, Johnston, Bear, & Templeton, 2009).

Group A students were Late Letter Name- Alphabetic Spellers, the second stage of spelling development described in chapter two. Their intervention consisted of short vowels in CVC words (see Appendix D for unit sequence). The words studied were composed of short *a*, *e*, *i*, *o*, and *u* in simple CVC words. They also studied short vowels with the initial and final diagraphs *sh*, *ch*, *wh*, and *th* and initial *r*- and *l*-blends. Words with short vowels preceding nasal consonant blends, such as *-ng*, *-nt*, *-nd*, *-nk*, and *-mp* were studied as well.

Group B was in the third stage of spelling development, specifically the early *Within Word Pattern* stage. Their intervention consisted of common long vowel patterns (see Appendix D). They studied short *a*, *o*, *u*, and *e*. The long vowel patterns were composed of final *-e* and CVVC patterns for long *a*, *o*, *u*, and *e*. The CVVC pattern for long *a* was *ai* and for long *o* was *oa*. The CVVC pattern for long *u* was *oo* and *ui* and the for long *e* was *ee* and *ea.*
Group C were also in the third stage of spelling development, specifically the late Within Word Pattern stage. Their intervention consisted of less common long vowel patterns (see Appendix D). They studied short $a$, $o$, $u$, and $i$. The long vowel patterns were composed of final -$e$ and CVVC like in group B, but group C also examined open syllable patterns (CVV) and the long $i$ pattern of -igh (VCC). The open syllable pattern studied for long $a$ was -$ay$ and for long $o$ was -$ow$. Both -$y$ and -$w$ sometimes act as vowels. The open syllables for long $u$ were -$ew$ and -$ue$ and for long $i$ was -$y$.

**Control Group**

The control group classroom was taught using only the Open Court basal reading curriculum in a whole class format. Open Court curriculum is designed to teach decoding, comprehension, inquiry and investigation, and writing. Each unit is divided into three components: Preparing to Read, Reading and Responding, and Language Arts. The first and third components are most relevant to this study. The Preparing to Read section includes instruction in phonemic awareness, sounds and letters, phonics, fluency, and word knowledge. The section on Reading and Responding emphasizes reading for understanding. The Language Arts section focuses on spelling, vocabulary, writing process strategies, grammar, and speaking and listening. Lessons in the Open Court program are laid out in a suggested five-day planner for teachers.
Conclusion

Chapter 3 provided the details of the methodology of the study. It presented procedures and participants involved for both treatment and control groups. It also described the quantitative and qualitative methods used to measure student growth and document student development. Chapter 4 presents an analysis of the study results that relies on pre and post assessment data, student interviews, field notes, and videotaped data.
Chapter 4

FINDINGS

The purpose of this mixed-methods study was to research the impact of supplemental differentiated word study instruction on the spelling and phonics development of second graders. A treatment group received word study instruction in conjunction with the basal reading program curriculum while a control group received only the basal program curriculum. An additional purpose of this study was to examine what can be learned of a practical nature from implementing word study in a second grade classroom.

This chapter summarizes the results of the data collected for this research project. Results from pre and post assessments for overall knowledge on both spelling and phonics features are reported. Observations and student comments regarding word study during and after the intervention period are presented as well.

Assessments

Treatment and Control Group

In the methods section of this report, two assessments were described: The Primary Spelling Inventory and the Basic Phonics Skills Test-III. This section reports the means and standard deviations for each of the assessments for the treatment and control groups. It also describes results from an analysis of variance that was conducted to determine the significance of any differences. Finally, it reports on several effect size statistics that are used to determine not the probability of the difference between the means, but the magnitude of the differences.
**Pretest and posttest score summaries and analysis.** Table 2 portrays the means and standard deviations for scores on the Primary Spelling Inventory (PSI).

Table 2

*Pre and Posttest Means and Standard Deviations, Primary Spelling Inventory*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>53.8/14.8</td>
<td>62.5/14.3</td>
</tr>
<tr>
<td>Control</td>
<td>58.3/16.2</td>
<td>60.9/15.6</td>
</tr>
</tbody>
</table>

Table 3 portrays the means and standard deviations for scores on the Basic Phonics Skills Test-III (BPST).

Table 3

*Pre and Posttest Means and Standard Deviations, Basic Phonics Skills Test*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>42.4/17.4</td>
<td>48.8/15.5</td>
</tr>
<tr>
<td>Control</td>
<td>44.5/16.8</td>
<td>48.6/16.0</td>
</tr>
</tbody>
</table>

To determine whether a significant statistical difference existed between the means for both assessment measures of the treatment and control group an analysis of
variance (ANOVA) was used. For scores on the PSI the main effect was not significant \((F_1, 82 = 2.92; p = .09)\). The interaction between condition and time of test was also not significant \((F_1, 82 = .85; p = .36)\). These findings indicate that no significant differences between the treatment and control group were found using the PSI. For scores on the BPST the main effect for condition was not significant \((F_1, 82 = .08; p = .78)\). The interaction between condition and time of test also failed to produce significance \((F_1, 82 = .11; p = .74)\). These findings indicate that no significant differences between the treatment and control group were found using the BPST. Note that paired sample t-tests comparing means on both the PSI and BPST for both treatment and control groups on pretest and posttest were significant. The comparisons of the treatment group pre and posttest means on both the PSI and BPST was \(p < .0001\). The comparison of the control group pre and posttest means on the BPST was also \(p < .0001\), while the comparison of the means on the PSI was \(p < .047\). In other words, both the treatment and control groups showed improvements that were significant, indicating that both groups gained over the six weeks of instruction regardless of their presence in the traditional basal reading program or under the condition of the supplemental word study treatment. Because both groups improved yet there was no difference between the groups on either measure regarding pretest and posttest scores, an effect size statistic was computed. Effect size is a statistic that describes the magnitude of a measured difference between means. Cohen's \(d\) was used to examine the magnitude of the difference between the means on the pre and posttest of the
treatment group. Table 4 portrays the effect sizes for both the spelling and phonics measures.

Table 4

*Effect Sizes*

<table>
<thead>
<tr>
<th></th>
<th>PSI Effect Size</th>
<th>Percentile</th>
<th>BPST Effect Size</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>0.6</td>
<td>73%</td>
<td>0.4</td>
<td>66%</td>
</tr>
<tr>
<td>Control</td>
<td>0.2</td>
<td>58%</td>
<td>0.2</td>
<td>58%</td>
</tr>
</tbody>
</table>

The *d* value for the word study group PSI scores was .6. This is considered a significantly large effect size. It indicates that the mean of the treated group has a 73rd percentile standing. The *d* value for the word study BPST-III scores was .4. This is considered a medium effect size. It indicates that the mean of the treated group is in the 66th percentile.

Neither measure for the basal reading program group had a significant effect size. The *d* value for the control group PSI scores was .2. The *d* value for the control group BPST-III scores was also .2. This indicates that the means of the basal reading program group has a 58th percentile standing, which is considered insignificant.

Means were furthered investigated for posttest differences by calculating the effect size for students of differing ability. For the purpose of data analysis, students were divided into high, medium, and low ability groups which were determined by
their total points on the PSI. Table 5 portrays the means and standard deviations for the treatment and control ability group scores on the PSI.

Table 5  
Pre and Posttest Means and Standard Deviations, Ability Groups, Primary Spelling Inventory

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment High</td>
<td>70.2/5.6</td>
<td>75.2/1.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Control High</td>
<td>72.8/4.2</td>
<td>72.7/4.9</td>
<td>-0.2</td>
</tr>
<tr>
<td>Treatment Middle</td>
<td>56.1/4.2</td>
<td>68.7/5.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Control Middle</td>
<td>59.8/3.7</td>
<td>65.2/4.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Treatment Low</td>
<td>37.4/8.2</td>
<td>45.4/8.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Control Low</td>
<td>39.1/8.3</td>
<td>43.4/12.8</td>
<td>0.4</td>
</tr>
</tbody>
</table>
Table 6 portrays the means and standard deviations for scores on the BPST.

Table 6

*Pre and Posttest Means and Standard Deviations, Ability Groups, Basic Phonics Skills Test*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Cohen's $d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment High</td>
<td>58.3/4.1</td>
<td>61.0/2.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Control High</td>
<td>56.1/6.3</td>
<td>59.1/3.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Treatment Middle</td>
<td>49.6/7.1</td>
<td>56.7/7.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Control Middle</td>
<td>51.2/5.4</td>
<td>56.0/2.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Treatment Low</td>
<td>21.4/8.3</td>
<td>30.3/8.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Control Low</td>
<td>25.9/14.2</td>
<td>30.8/14.8</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Although the effect size for the high-ability group was large for both the treatment and control groups on the BPST, the high-ability treatment sub-group had a greater gain than the control group. The high-ability treatment sub-group had a large effect size on the PSI while the control group PSI scores actually decreased slightly and created a negative effect size. Both the treatment and control middle-ability sub-groups had a large effect size. The treatment middle-ability group made the largest gains on the PSI and had the highest effect size overall. The low-ability treatment
group made large gains on both the PSI and BPST-III, while the low-ability control group had only small effect sizes on both measures.

In summary, no statistically significant difference was measured between the groups on either measure considering pretest and posttest scores. However, effect size statistics suggest that the increase, or gain, for the treatment group was greater than the increase for the control group. The treatment low-ability sub-group had greater gains on both the PSI and BPST-III than the control low-ability group. The treatment and control middle-ability groups made large gains on both measures, with the treatment sub-group making the highest overall gains on the PSI. The treatment high-ability group made a slightly higher gain on the BPST-III and a significantly larger gain on the PSI than the control sub-group.

Qualitative Measures

In addition to the quantitative measures, the researcher conducted observations and interviews and developed a field record to provide a more fine-grained view of student responses to the treatment. Because observations and interviews were not conducted with the control group, comparison of qualitative data cannot be done. However, themes and patterns from the observations and interviews will be discussed in this section to provide insight into more holistic student performance during their instructional time. The intent is to offer a preview for any teacher who might be interested in using word study groups as a supplement to a basal reader.
Observations

**Routines.** As to be expected, as the weeks progressed during the intervention period, students appeared to be more comfortable with the routines and content of word study. There was a perceptible difference in week four. Many students were capable of conducting word sorts with better automaticity on their own. For example, in week four, students were observed reading word lists on their own to see if there were any words they were unsure of before they started cutting out and sorting. Students were also observed reading words out loud without being prompted after they sorted all of their words. Reading aloud helps students discover misplaced words by their sounds.

Initially the 20 minutes allotted to each group for word study seemed to be too short. Prior to week four, it was difficult to always fit in after-sorting routines. Students were not always able to write their sorts in their word study notebooks or even read the words in their sorted categories before the bell would ring to indicate it was time to switch stations. However, after the first few weeks of practice, 20 minutes was enough time to complete many of the necessary activities.

**Scaffolding and reviewing.** The importance of scaffolding became apparent in week three. During this week the researcher attempted to introduce open sorting. In open sorts students create their own categories. There was a lot of confusion as students were not yet able to anticipate the categories and find their own headers. Students were able to be more successful with open sorts as the weeks went on. The researcher had to supply sufficient guidance to get to the point where some students
could do open sorts independently. Guidance included hints such as, "There are four
categories for this sort" and directing students to explore the vowels sounds and
patterns they heard and saw in the word list.

Reviewing sounds and patterns learned in previous word sorts, as well as the
sounds and patterns currently being studied, was an important way to start each work
shop session. When the researcher failed to do this on several occasions, it was
obvious that there was more confusion on subsequent activities. Sorting of new words,
or independent sorting of the previous days words went more smoothly when there
was review. Reviews consisted of going over sound/spelling cards and probing
questions, such "What is a way to spell long e?"

**Ongoing evaluation.** Informal assessment was necessary to check in on
individual student learning along the way. It was difficult to always observe if all
students in a group were sorting words correctly. Blind sorting became a preferred
way to check in with each student. As mentioned in chapter three, in blind sorting the
researcher called out words for students to decide which category they belonged to.
Blind sorts are a good way to gauge if students are really attending to the sounds in
words, and not just the visual pattern, which can sometimes "give away" a category
(Bear et al., 2008). Another preferred method for assessment was the written sort.
During a written sort, all students were doing the same thing at once and it was easy
for the researcher to quickly observe if each student was associating the sounds heard
with correct, or at least viable, spelling patterns. A third method of evaluation was the
discussion of "oddball" words. Oddball words are better described as irregular words.
The word *said* would be considered an oddball word because it contains the *ai* pattern, which normally represents a long *a* sound, yet it does not sound like long *a*. Asking students to explain why a word was considered an oddball became a valuable assessment tool.

**Student interest and engagement.** Students had a high interest in participating in word study. Students were always eager to begin workshop time. Positive comments could be overheard, such as, "This is fun!" and "I like doing this! We get to learn words. So we can read better!" Students were engaged in the activities of cutting, sorting, and reading words. It was apparent that students were invested in their sorts and would excitedly exclaim, "I know where the word goes!" or "Oh, yeah!" upon discovering a word that didn't belong in a category. Students also looked forward to playing the word games with a partner and would express disappointment the few days games were not used.

A major interest for students was the oddball words. During every new word sort students were determined to find the oddball words and enthusiastic when they did. Students also had a high interest in word meaning and were interested in definitions of unknown words and liked coming up with their own examples.

**Group size.** Each of the three differentiated groups was composed of seven students. Over the course of the treatment the researcher discerned that the group size was too large. It was difficult to attend to all students in a session. This resulted in the neediest students, approximately one-third of each group, being off-task on occasion while they waited for the researcher's attention.
**Student Interviews**

Post-treatment student interviews were conducted with each group to document the impact of the word study instruction. Interviews revealed what stood out about the word study process for students. Children talked about categorizing words by sound and spelling. One student remarked, "We worked with a, e, i, o, u...how they looked and the sounds they make". Students recalled "matching" words to the headers and discovering oddball words, "It was fun to be the first one to find the oddballs!"

They recalled the various spelling patterns that were studied, such as *ai, ea*, and *oo* for the long *u* vowel sound. Students liked cutting the words and being able to mix them up and then "put them back in order." They especially like playing games and were able to name each game played over the weeks.

When asked if anything was hard about word study each group had something different to say. The letter name-alphabetic group, which studied short vowels in CVC words, replied that the longer words were hard, but it was easier when you looked at the smaller parts. The within word pattern group that studied common long vowel patterns remarked that it was harder to sort by sound, as in a blind sort, than by spelling pattern. The second within word pattern group, which studied less common long vowel patterns, thought that the words they studied were too easy and wanted to work with more difficult words.

All groups thought that studying words helps them to read and spell better. In regards to reading one student shared, "When I get stuck I think of the sorts to see if it can help me with the patterns." Another student commented, "Now I think harder
about ways to spell." Students agreed that studying words that are spelled differently but sound the same was good practice.

**Conclusion**

The purpose of the Chapter 4 was to report the findings from the study. A pre and posttest nonrandomized control group quasi-experimental design was used to analyze student data and determine the effect of supplemental differentiated word study on the spelling and phonics development of second graders. Additional descriptive data was reported in order to present a more holistic view of implementing word study groups in the classroom. Chapter 5 further discusses the findings and implications of the study.
Chapter 5

DISCUSSION

The researcher hopes that this study will contribute to the knowledge base on spelling instruction by analyzing evidence that speaks to the impact of differentiated word study on the spelling and phonics development of second-graders. In addition, the study offers a contribution in the way of what can be learned of practicality in implementing word study in a second grade classroom.

Traditionally, spelling has been taught as a skill to acquire by rote memorization. In the traditional model, learners practice spelling lists of words for a test on Friday. In contrast, word study approaches spelling instruction as a developmental process wherein learners discover word patterns and build knowledge based on their discoveries. Children's orthographic word knowledge develops along a continuum. Henderson describes six stages of orthographic knowledge (Bear et al., 2008), beginning with the scribbling of children under five years of age and continuing through adulthood. The Letter Name-Alphabetic and Within Word Pattern Spelling stages were most relevant to this study, as students in second grade typically fall in either of these two stages. Implementing word study in the classroom requires assessment to determine what students are "using, but confusing" and placement in the appropriate instruction group based on the student's zone of proximal development (Vygotsky, 1986).

There is some evidence that word study fosters a deeper understanding of English orthography not just for writing but for reading words and therefore
contributes to reading development (Bear et al., 2008; Henderson & Templeton, 1986). The spelling and decoding of words share a common orthographic base (Templeton & Morris, 2000).

This final chapter discusses the impact of developmental word study on the spelling (writing) and phonics (reading) development of second graders as it was documented over several weeks. Although the analysis of variance produced no evidence that students in the control condition scored significantly differently from students in the treatment condition, there was evidence that each group looked at separately produced significantly higher posttest scores when compared with pretest scores on measures of spelling and phonics development, and the analysis of magnitude (effect size) indicated that developmental word study had a greater impact on learning than did the basal reading curriculum materials used alone.

Results

Gains in Spelling and Phonics

Both the treatment and control groups were given two pre and posttests- one for spelling and another for phonics. An analysis of variance (ANOVA) failed to show a significant difference between the group's means for main effect or interaction between condition and time of test on either measure. It is important to note that while both group means increased significantly on both measures, a paired sample t-tests revealed that the likelihood of deriving a difference between the means of students pretest vs. posttest on the Primary Spelling Inventory for the word study group was $p < 0.0001$ while the likelihood of deriving such a difference for the control was $p <$
0.047. This illustrates that the treatment group had a much higher likelihood of gaining in spelling than did the control group.

Although the treatment group made larger gains than the control group in spelling, the lack of a statistically significant difference on either measure based on time of test may be due to several reasons. One possible reason is the brevity of treatment. Six weeks of intervention allowed for only one unit of study. Another limitation was the lack of randomness in the sampling. Non-randomized sampling threatens internal validity by creating biased data. Random selection was not possible due to the nature of the classroom setting. Additionally, since the study was conducted with only one treatment and one control group, the sampling size was small, which also contributes to lower internal validity.

Conducting a controlled investigation in the context of a classroom setting is challenging. It is difficult for a researcher to control classroom events for both the experimental and control group. The researcher cannot ensure that, besides the intervention treatment, both the experimental and control groups will receive an identical literacy experience. The researcher cannot control the difference in teaching styles of the classroom teachers in the experimental and control groups. In this specific study, the researcher also could not control additional intervention services certain participants received over the course of the research.

Due to the inherent difficulty of conducting a pure experimental design in a classroom setting, the researcher chose a mixed methods design that employed the use of descriptive measures. One such measure was computing the effect size. Effect size
quantifies the magnitude of the difference between the experimental and control group as distinct from the likelihood that this difference could be measured, which t tests quantify. In other words, it is possible to find a significant effect with a corresponding small effect size. It is also possible to find a non-significant difference with a correspondingly large effect size. The latter situation was the case in this study.

As mentioned in chapter four, the control group's effect sizes for both measures are considered small, while the treatment group PSI effect size is considered large and the BPST effect size is considered medium. The PSI mean of the treatment group is in the seventy-third percentile. The BPST mean of the treatment group is at the sixty-sixth percentile. The large and medium effect size of the treatment group compared to the small effect sizes of the control group does not simply answer if the treatment worked or not, but whether the treatment supplemented or made stronger the overall impact of instruction in the context of a second-grade classroom. Based upon effect size, supplemental differentiated word study does indeed positively impact the spelling and phonics achievement scores of second graders.

The most noticeable gain of the treatment group over the control group was on the spelling assessment. Although the middle ability control students made a large gain, the largest overall impact was made in spelling by the middle ability students in the word study group. The PSI effect size was over 2.0, which indicates the mean of the middle ability treatment group is in the ninety-eight percentile. It can be presumed that the treatment affected these "average" students in a way that made spelling patterns "click" for them. The high ability and low ability treatment students also
made significant gains over the control sub-groups. Students in the word study group were able to internalize the various spelling features and generalize to entire groups of words that are spelled the same way more easily than the control group. Students in the low ability treatment group were also more skilled at transferring this knowledge to decoding as compared to the control group. This result is important given that these students are perceived as "at-risk" because they do not meet grade-level expectations. Research has shown that children who perform below grade-level in the primary grades often continue along this trajectory of academic failure (Juel et al., 1986; Torgesen, 2004). This study provides evidence that word study is beneficial not only for spelling development but reading development as well. Development in spelling fosters the use of a phonological strategy in reading (Cataldo & Ellis, 1988).

**Implications for Instruction**

This study implies that word study, in addition to a basal reading program, benefits the phonics and spelling development of second grade students. In addition to larger effect size for spelling and phonics achievement scores for the treatment group as compared to the control group, students in the word study group were motivated and engaged.

**Differentiated Instructional Groups**

Differentiated instruction is the foundation of word study. Teachers must assess each student using a spelling inventory to determine instructional level. Students are grouped by their instructional needs and the systematic scope and sequence of the orthographic features is created to meet those needs during word
study. On-going assessment is crucial as the groups are meant to be flexible (Bear et al., 2008). Some students may progress at a faster or slower rate than others and need to be moved to a different instructional group to meet their needs.

**Instructional Routines**

Implementing a word study routine in the classroom can be intimidating. It does require a large amount of effort by the classroom teacher to initiate such a program. Below are described what was learned from this study that may be applied in other classrooms.

**Procedures.** The basic procedures followed for word study were (a) review previously learned spelling patterns; (b) introduce words with new features and explain any that students were unsure of; (c) establish categories; (d) model (if necessary); (e) support student practice and provide feedback, and (f) ensure independent student practice.

In addition, the introductory lessons described in chapter three were very important to familiarize students with the routines of word study. Prior to starting the differentiated lessons students practiced cutting and sorting pictures and easier rhyming words. They practiced discussing category headings and what groups had in common. They practiced spelling with blind sorts, writing in their word study notebooks, and playing a word game.

**Sorting.** Sorting is an integral part of word study. It "offers the best of both constructivist learning and teacher-directed instruction" (Bear et al., 2008, p. 51).
Students do not just memorize a list of spelling words but construct their own word knowledge that they can apply to spelling and reading.

The researcher found that enabling to students time to read word lists on their own was one behavior that led them to "own" the words and achieve more independence in sorting. Students were more active participants when they had time to read the new word list on their own before reviewing it with the researcher.

After-sorting routines also became a critical component during word study. Within the same development group students still finished sorting at different times. Several activities ensured that all students were able to get the most out of word study. Students who had time wrote the sort into their word study notebook to be checked later by the teacher for student understanding. Students also helped one another finish a sort and then could read their own sorts to each other. By reading out loud students were able to hear any words they miscategorized.

**Scaffolding.** Some students had a difficult time moving from researcher-directed closed sorts to student-centered open sorts initially. In closed sorts the teacher defines the categories and models the sorting. In open sorts students create their own categories. The researcher scaffolded this process to ease students into more independent sorting. Semi-open sorting occurred with the researcher talking students through categorizing their words. The researcher would first direct students to focus on the contrasting sounds they heard in the words, such as long and short -o, and then ask them to look for different patterns. Some students needed to be told how many
categories to locate. This process helped students in all groups' complete more open sorts by the end of the intervention.

Additionally, the researcher would guide students to find and correct words that they miscategorized. Instead of telling the error, the researcher would comment, "I see a word that doesn't belong in this category. Read your words from the top to the bottom and see if you can find it."

**Student independence.** Students in this study worked independently on sorts and playing games that used the spelling features they were learning. Games are motivating for students and encourage them to work with spelling patterns in more depth and apply what they have learned in a new situation. An activity that was not used during this study was word hunts. In word hunts students hunt for words containing the patterns they are studying in previously read books. This helps students make the connection between spelling and reading words (Bear et al., 2008).

**Conclusion**

This study provided evidence that word study promotes a deeper understanding of English orthography. The analysis of magnitude demonstrated that developmental word study instruction had a greater impact on the spelling and phonics scores of second graders than did the *Open Court* materials alone. Observations and student interviews indicated that students were motivated and engaged in the hands-on constructivist activities involved in word study.

This study investigated the impact of supplemental word study in the classroom. However, based on the data analysis and review of the research, the
researcher suggests that word study may be a better model for spelling and phonics development than the traditional basal reading program. Traditional programs separate spelling and reading instruction but do not capitalize on the inherent overlaps between them. Traditional programs also do not consider the developmental needs of each student and often fail to teach at a child's instructional level. Word study is an effective way to integrate spelling and phonics instruction and impact student motivation, engagement, and achievement scores.
APPENDIX A

Primary Spelling Inventory Word List
# Primary Spelling Inventory (PSI)

The Primary Spelling Inventory (PSI) is used in kindergarten through third grade. The 26 words are ordered by difficulty to sample features of the letter name--alphabetics within word pattern stages. Call out enough words so that you have at least five or six misspelled words to analyze. For kindergarten or other emergent readers, you may only need to call out the first five words. In late kindergarten and early first grade classrooms, call out at least 35 words so that you sample digraphs and blends; use the entire list for late first, second, and third grades. If any students spell more than 20 words correctly, you may want to use the Elementary Spelling Inventory.

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<thead>
<tr>
<th>Word</th>
<th>Sentence</th>
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</thead>
<tbody>
<tr>
<td>fan</td>
<td>I could use a fan on a hot day.</td>
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<tr>
<td>pet</td>
<td>I have a pet cat who likes to play.</td>
</tr>
<tr>
<td>dig</td>
<td>He will dig a hole in the sand.</td>
</tr>
<tr>
<td>rob</td>
<td>A raccoon will rob a bird's nest for eggs.</td>
</tr>
<tr>
<td>hope</td>
<td>I hope you will do well on this test.</td>
</tr>
<tr>
<td>wait</td>
<td>You will need to wait for the letter.</td>
</tr>
<tr>
<td>gum</td>
<td>I stepped on some bubble gum.</td>
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<tr>
<td>sled</td>
<td>The dog sled was pulled by huskies.</td>
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<tr>
<td>stick</td>
<td>I used a stick to poke in the hole.</td>
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<tr>
<td>shine</td>
<td>He rubbed the coin to make it shine.</td>
</tr>
<tr>
<td>dream</td>
<td>I had a funny dream last night.</td>
</tr>
<tr>
<td>blade</td>
<td>The blade of the knife was very sharp.</td>
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<tr>
<td>coach</td>
<td>The coach called the team off the field.</td>
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<tr>
<td>fright</td>
<td>She was a fright in her Halloween costume.</td>
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<tr>
<td>chewed</td>
<td>The dog chewed on the bone until it was gone.</td>
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<tr>
<td>crawl</td>
<td>You will get dirty if you crawl under the bed.</td>
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<tr>
<td>wishes</td>
<td>In fairy tales wishes often come true.</td>
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<tr>
<td>thorn</td>
<td>The thorn from the rosebush stuck me.</td>
</tr>
<tr>
<td>shouted</td>
<td>They shouted at the barking dog.</td>
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<tr>
<td>spoil</td>
<td>The food will spoil if it sits out too long.</td>
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<tr>
<td>growl</td>
<td>The dog will growl if you bother him.</td>
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<tr>
<td>third</td>
<td>I was the third person in line.</td>
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<tr>
<td>camped</td>
<td>We camped down by the river last weekend.</td>
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<tr>
<td>tries</td>
<td>He tries hard every day to finish his work.</td>
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<tr>
<td>clapping</td>
<td>The audience was clapping after the program.</td>
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<tr>
<td>riding</td>
<td>They are riding their bikes to the park today.</td>
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</tbody>
</table>
APPENDIX B

Primary Spelling Inventory Feature Guide
# Words Their Way Primary Spelling Inventory Feature Guide

**Student's Name:** [Name]

**Teacher:** [Name]

**Grade:** [Grade]

**Date:** [Date]

**Words Spelled Correctly:** 26 / 56

**Feature Points:** 56 / 56

**Total:** 82 / 82

**Spelling Stage:**

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<th>Consonants</th>
<th>Initial</th>
<th>Final</th>
<th>Short Vowels</th>
<th>Digraphs</th>
<th>Blends</th>
<th>Long Vowel Patterns</th>
<th>Other Vowels</th>
<th>Inflected Endings</th>
<th>Feature Points</th>
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**Totals:** 17 / 17 / 17 / 17 / 17 / 17 / 17 / 17 / 17 / 56 / 26
APPENDIX C

Basic Phonics Skills Test III
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</table>
**BPST-III [Basic Phonic Skills Test] Recording Sheet**  
(For students below a fourth-grade reading level)  
John Shefelbine, California State University, Sacramento

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Grade</th>
<th>Evaluator</th>
</tr>
</thead>
</table>

Consonant sounds and names: Record sounds on top of each letter and names under each letter; do all sounds before doing letter names; you might skip names for sounds that are correct; mark correct answers with √, incorrect answers with actual response, and no response with NR.

| m | s | f | l | r | n | h | v | w | z (continuous sounds) | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| b | c | d | g | p | t | j | k | y | x | q (stop sounds) | 21 |   |   |   |

Short vowel sounds. SAY: “Tell me the sounds of these letters.” If the students give a long vowel sound, prompt them by asking if they know another sound. Do not specifically ask for short vowel sounds. Record incorrect answers with actual response or NR if no response. Mark on top with “” for short, “” for long. Since you are only interested in the short vowel sounds, there is no need to prompt students if they do not give the long sounds.

<table>
<thead>
<tr>
<th>i</th>
<th>o</th>
<th>a</th>
<th>u</th>
<th>e</th>
<th>5 short</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

Reading words with phonics patterns: Record incorrect answers with actual response or NR.  
Note: Consider stopping when total number correct on two consecutive rows is 0-1.

<table>
<thead>
<tr>
<th>a)</th>
<th>van</th>
<th>mop</th>
<th>fell</th>
<th>sun</th>
<th>fix</th>
<th>10 short</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>b)</td>
<td>lot</td>
<td>kid</td>
<td>hug</td>
<td>wet</td>
<td>map</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>chin</td>
<td>bath</td>
<td>when</td>
<td>shut</td>
<td>song</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>left</td>
<td>must</td>
<td>frog</td>
<td>flip</td>
<td>snack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>fine</td>
<td>hope</td>
<td>cute</td>
<td>kite</td>
<td>rake</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>f)</td>
<td>soap</td>
<td>leak</td>
<td>pain</td>
<td>feed</td>
<td>ray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>g)</td>
<td>burn</td>
<td>fork</td>
<td>dirt</td>
<td>part</td>
<td>serve</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>h)</td>
<td>coin</td>
<td>soon</td>
<td>round</td>
<td>lawn</td>
<td>foot</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>rested</td>
<td>stayed</td>
<td>passes</td>
<td>making</td>
<td>ripped</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>j)</td>
<td>distrust</td>
<td>useful</td>
<td>unfair</td>
<td>hardship</td>
<td>nonsense</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>k)</td>
<td>silent</td>
<td>ladder</td>
<td>napkin</td>
<td>polite</td>
<td>cactus</td>
<td></td>
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<tr>
<td>l)</td>
<td>volcano</td>
<td>potato</td>
<td>electric</td>
<td>frequently</td>
<td>combination</td>
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</tbody>
</table>

Interpretation: Color code items that are proficient (P) with no color, review (R) with yellow, and instruct (I) with red (P = 5-7, R = 3-5, I = 0-3); 0-3 = R, 4-5 = I, 6-8 = P.

Total score = P + R + I, and total of (I) - (R) = P + R = P, 15-12 = R, 12-8 = I.
APPENDIX D

Unit Sequences for Differentiated Groups
<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td>Short Vowels in CVC Words</td>
<td>Short $i$ and $u$ in easy CVC words</td>
<td>Short $a$, $i$, $e$ with initial digraphs</td>
<td>Short $e$, $o$, $u$ with initial blends</td>
<td>Short vowels with final digraphs</td>
<td>Short vowels before $ng$ and $mp$</td>
<td>Short vowels before $nt$, $nd$, and $nk$</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td>Common Long Vowel Patterns</td>
<td>Short $a$ and long $a$ (CVCe and CVVC)</td>
<td>Short $o$ and long $o$ (CVCe and CVVC)</td>
<td>Short $u$ and long $u$ (CVCe and CVVC)</td>
<td>Short $e$ and long $e$ (CVCe and CVVC)</td>
<td>Short $e$ (CVCe and CVVC) and long $e$ (CVVC)</td>
<td>Review for CVVC pattern ($ai$, $oa$, $ee$, $ea$, $ui$, $oo$)</td>
</tr>
<tr>
<td><strong>Group C</strong></td>
<td>Less Common Long Vowel Patterns</td>
<td>Short $a$ and long $a$ (CVCe, CVVC -$ai$, and Open Syllable -$ay$)</td>
<td>Short $o$ and long $o$ (CVCe, CVVC -$oa$, and Open Syllable -$ow$)</td>
<td>Short $u$ and long $u$ (Open Syllable -$ew$ and -$ue$)</td>
<td>Short $i$ and Long $i$ (CVCe, CVCC -$igh$, Open Syllable -$y$)</td>
<td>Short $i$ and long $i$ (VCC) with short $o$ and long $o$ (VCC)</td>
<td>Review of long vowel patterns</td>
</tr>
</tbody>
</table>
REFERENCES


