

The Effect of Integrated Strategy Instruction
On Spelling and Reading Achievement of Fifth Grade Students

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Abstract

The purpose of this study was to determine if fifth grade students of various achievement levels would achieve higher in spelling and reading after receiving explicit integrated instruction of encoding and decoding strategies. The measurement tools were the Words Their Way Spelling Inventory, the Scholastic Reading Inventory, and the Bader Graded Word List Inventory. This study involved the use of a quasi-experimental design with two sample groups: The intervention group (n=15) and the control group (n=19). SRI, Bader, words spelled correctly, word feature, and spelling combined scores were obtained before and after the intervention for both groups. The two groups did not differ significantly on any of the variables as seen by the following statistical results: SRI (Intervention Mean = 595.80, SD = 308.69; Control Mean = 674.79, SD = 222.35) [$t(32) = .87, p = .39$]; Bader (Intervention Mean = 74.40, SD = 22.76; Control Mean = 79.68, SD = 13.72) [$t(32) = .79, p = .44$]; Words spelled correctly score (Intervention Mean = 13.80, SD = 7.13; Control Mean 16.11, SD = 5.33) [$t(32) = 1.08, p = .29$]; Feature score (Intervention Mean = 44.47, SD = 15.91; Control Mean = 49.89, SD = 8.39) [$t(32) = 1.20, p = .25$]; and Combined score (Intervention Mean = 58.27, SD = 22.74; Control Mean = 66.53, SD = 13.68) [$t(32) = 1.24, p = .23$]. This study did not provide evidence that small group explicit integrated encoding and decoding instruction significantly affected spelling abilities; however, time spent on spelling instruction did not negatively impact reading skills. Implications, limitations, and recommendations for future research are discussed.

CHAPTER I

INTRODUCTION

When a young child is first learning to read and write, there are many different skills taught to help a child put sounds and letters together. As the child gets older, the instruction changes because it can be commonly thought that he or she should already know how to read the words accurately and spell the words correctly in order to gain deeper meaning from text and express ideas clearly in writing by the later grades. As a teacher, this researcher has observed that the difficulty with this scenario is there are many students who struggle with reading words accurately and struggle with spelling words correctly, even in the intermediate grade levels. Once the student reaches an intermediate grade level, the focus of instruction has shifted to more comprehension and written expression, but reading and spelling accuracy are foundational skills needed in order to be successful readers and writers.

There are interventions frequently put in place for students who struggle to decode accurately, but interventions to improve spelling are not commonly put into practice. Even though spelling is an important foundational skill for writing, the instruction is often very ineffective and may need to be more explicitly taught (Alderman & Green, 2011). Many students are given arbitrary lists they have to practice for the weekly spelling test. If they do poorly on these tests, their confidence goes down and they do not improve. Written expression becomes more difficult when a student is caught up feeling unconfident about spelling each word. Students need personalized lists based on their instructional levels and need to learn about patterns that make up the spellings of words. This will boost confidence and understanding instead of just memorization. Many students do not see the importance of spelling, but spelling

and word recognition rely on one another and are both necessary for overall reading and writing achievement.

One concern with teachers providing explicit spelling instruction is that it can potentially take away from instructional time focused more specifically on reading. This researcher decided to investigate the concept of providing a spelling intervention integrated into reading instruction to improve the spelling without negatively affecting general reading achievement, and potentially improve reading accuracy also. It was observed that students' spelling achievement was not improving and there was no time within the daily schedule for spelling instruction. By incorporating spelling instruction in the reading time, the researcher analyzed the effects of targeted, explicit, small group spelling instruction on overall spelling and reading achievement.

Statement of the Problem

The purpose of this study was to determine whether explicit, small group spelling instruction at a student's instructional spelling level would improve spelling, word accuracy, and overall reading achievement.

Hypotheses

Null Hypothesis 1

There will be no statistically significant difference in the spelling achievement between students who received small group explicit integrated encoding and decoding instruction three days per week as a similar group of students that did not receive the intervention, as measured by the three categories in the Words Their Way Spelling Inventory: Words Spelled Correctly, Features, and Combined (Bear, Invernizzi, Templeton, & Johnston, 2012)

Null Hypothesis 2

There will be no statistically significant difference in word reading accuracy, as measured by the Bader Reading and Language Graded Word Lists (Bader & Pearce, 2013), between students who received small group explicit integrated encoding and decoding instruction three days per week, and a similar group of students that did not receive the intervention.

Null Hypothesis 3

There will be no statistically significant difference in overall reading achievement, as measured by the Scholastic Reading Inventory (Scholastic Inc., 2006), between students who received small group explicit integrated encoding and decoding instruction three days per week, and a similar group of students that did not receive the intervention.

Operational Definitions

Spelling Achievement: Spelling achievement is defined as performance on the standard spelling test created by Words Their Way that contains twenty-five words that range in difficulty from least difficult (consonant vowel consonant words) to most difficult for elementary aged students (words typical for a fifth to sixth grade student). Students received three raw scores from this assessment. The first score was the number of whole words spelled correctly out of twenty-five total words on the list. The second score was the feature raw score. For each type of spelling pattern in the individual words, students can receive points, so even if they spelled a whole word incorrectly, they could get feature points if they spelled certain parts of the word correctly. This shows what students do know and what types of mistakes they were making. The feature raw scores in each category determine a student's spelling level in Words Their Way. The third score was the combined raw score of the word and feature scores together.

For the purpose of this study, overall reading achievement is defined by a student's Lexile level, which is assessed by the Scholastic Reading Inventory. The Lexile represents the level at which a child can independently read passages and answer questions about those passages correctly.

Word Reading Accuracy: For the purpose of this study, reading word accuracy, or word identification, is defined by performance on graded word lists from the Bader Language Inventory. The inventory consists of one list for each grade level that contains ten words students at that level are expected to be able to read accurately. The list begins at a pre-primer level, followed by primer level, followed by grade 1, and so forth. For the purpose of this study, word reading accuracy was based off of a formula devised by this researcher in which students received a point for each word they read correctly up through their attempt at all items on the list on which they had met the discontinue criterion of missing four or more words on a leveled list.

CHAPTER II

REVIEW OF THE LITERATURE

Reading and writing achievement are foundational skills that students need to master in order to be successful throughout their entire schooling career and are necessary life skills to function in society. In order to be writers, students must be able to spell words accurately so they can focus on the content of the writing and not get hung up on the spelling of each word or avoid using certain words because they can't spell the words they are thinking of. Similarly, in order for students to truly read they must be able to accurately identify each word they come across with ease so they can focus on the content of the reading. As students move into the intermediate grade levels, there is less focus on teaching strategies for word identification in reading because the focus shifts to comprehension strategy instruction. Students at this stage are moving away from learning to read and moving toward reading to learn. Based on conversations with parents and educators, many students in the intermediate grades are still required to have weekly spelling tests; however, there isn't always much, if any, spelling strategy instruction in many classrooms. In many instances, students are given a pre-test, then they practice spelling the words for homework all week, and they follow up with taking a test at the end of the week.

If writing cannot be achieved without solid spelling skills, and reading cannot be achieved without solid word identification skills, then it is necessary that students receive instruction in both areas to improve overall reading and writing performance. The purpose of this literature review is to understand the importance of both word identification and spelling within the classroom and how to teach both in one integrated approach during a tight daily schedule. This literature review will be broken into four main sections. Section one will discuss the role of word identification in the reading process and the foundation for improving word identification.

Section two will discuss spelling processes and the connection to reading. Section three will go over the foundational commonalities within spelling and reading. Lastly, section four will review the best type of instruction for both spelling and word identification.

The Importance of Word Identification

The simple definition for reading is “making meaning from print” (Leipzig, 2001, p. 1). Even though the overall description of reading seems simplistic, there are many processes and skills that have to work together in order to make real reading happen. In reality “reading is a multifaceted process involving word recognition, comprehension, fluency, and motivation,” (p. 1).

Word recognition or word identification is the process where students identify the phonemes (sounds) that match the grapheme (letter) patterns. Students have to be able to recognize patterns linked together to make words. Before students can comprehend or understand what they are reading, they must be able to accurately recognize, identify, and understand the words they come across. Phonemic awareness is a process of reading that is the foundation for word identification. Phonemic awareness is “the ability to consciously manipulate individual phonemes [sounds] in a spoken language. Phonemic awareness is often assessed by the ability to tap, count, or push a penny forward for every sound heard in a word like cat: /c/, /a/, /t/” (Bear et al., 2012, p. 412). Mastery of phonemic awareness is the foundation for reading because students must first be able to identify and segment the sounds that make up a word in order to match each of those sounds to letters. Word identification is the ability to look at the graphemes within a word and identify the sounds linked to those graphemes in order to recognize that they make up a word and know its meaning. There are more phonemes than there are graphemes, so graphemes link together to create the different phonemes. For example the long

‘a’ sound sometimes has ‘ai’ to represent the sound, and sometimes ‘a consonant e.’ without being able to hear the different phonemes within a word, identifying the matching graphemes would be more difficult. Therefore, phonemic awareness is a helpful skill for word identification.

Word identification plays a major role in overall reading achievement because in order for students to independently gain meaning from looking at text, students must be able to accurately read the words they come across correctly and understand the word meaning. As mentioned previously, phonemes are the individual sounds within a language and graphemes are the individual letters. “Morphemes are the smallest units of meaning in a language,” (Bear et al., 2012, p. 6). When students can recognize certain morphemes, then they can infer meanings of new words. Morphemes can include prefixes, suffixes, or Greek and Latin roots. An example of a morpheme is the prefix ‘re’, which can be linked to other morphemes to create words like *rethink*, *redo* or *reapply*. If students learn to recognize certain morphemes like these prefixes, then students can understand a basic meaning. For the example given, a student could understand that each of those words mean ‘to do again’. Even if a morpheme slightly changes as it is linked to other morphemes, it can help them recognize parts of a word in order to identify the whole word accurately. For example, “the letter sequence *photo* in *photograph*, *photographer*, and *photographic* signals spelling-meaning connections amongst these words, despite the changes in sounds that the letter represents,” (p. 6). Identifying the morpheme *photo*, can help the reader chunk the word for other morphemes they may recognize, or they can apply their knowledge of grapheme patterns to identify the word as a whole. When students can read words accurately and correctly recognize the words and their meanings, then students can comprehend, or gain meaning, from the text.

“Fluency is a key link between word recognition and comprehension,” (Bashir & Hook, 2009, p. 196). When a reader is quickly and accurately using orthographic, phonological, and semantic processes so that he or she is able to read through at a good rate of speed, the reader will be able to better focus on comprehension. This automaticity in the word identification process allows the reader’s brain to focus more on the meaning aspect of reading without having to expend a lot of focus on sounding out words or identifying what they mean. “In the beginning, the reader uses considerable effort for word decoding. As word recognition processes become more effortless and automatic, cognitive and linguistic resources can be re-allocated for comprehension,” (p. 198). If a student is not fluently identifying and understanding the words they read, then the student needs more instruction on word structure and to be taught strategies to improve word recognition to become an overall better reader.

The Importance of Spelling in Reading

The educational term for spelling ability is orthographic knowledge. “The word *orthography* is derived from two Greek roots: *orthos*, meaning *correct*, and *graphein*, meaning *to write*,” (Apel, 2011, p. 592). Orthography therefore means writing correctly. Orthographic knowledge requires that students have spelling patterns, letter/sound representations, and common word spellings memorized and stored in their brains. Orthographic knowledge has two main parts: mental graphemic representations and orthographic rules. “Mental graphemic representations [are] stored mental representations of specific written words or word parts,” (p. 595). An example of this would be when a student has spelled the word *Monday* so many times, that he or she has the whole word spelling memorized. There are many common words in our language that don’t necessarily follow a specific spelling pattern or rule and are just memorized from repetition. Other examples of words like this are *February*, *friends*, *said*, or *know*. These

are words that don't follow usual letter pattern/sound correspondent rules but students eventually store these word spellings in their brains and are able to recall the spelling when they go to write them. Apel (2011) explains the other category for orthographic knowledge as the following:

Orthographic rules [which are] rules that govern how speech must be represented in writing: Rules for how a letter or letters represent speech sounds (including alphabetic principle), rules for what letters can and cannot be combined, [and] positional and contextual constraint rules for the use of letters. (p. 595)

An example for this would be the rule for *i* before *e* except after *c*. Another rule is when two vowels are combined together, the first vowel says its name. An additional example is when there is a *vowel consonant e* then the first vowel becomes a long vowel and short vowels require at least two consonants after it. These are all examples of orthographic rules that students must learn and understand to help them spell words that they speak.

Just as students develop at different rates in reading, students also develop at different rates in spelling ability. There are five main stages of spelling development. "Stages are marked by broad, qualitative shifts in the types of spelling errors students make as well as changes in the way they read words," (Bear et al., 2012, p. 9).

The first stage is the emergent stage. When students are at this stage, they do not necessarily know direct phoneme/grapheme relationships. They may have an understanding that we write to tell stories, but the writing may be in the form of pictures, scribbles, and maybe some letters; however, the letters may not necessarily correlate to a specific sound. (Bear et al., 2012).

The second stage is the letter name-alphabetic stage. During this stage, students begin to use the letter names to help write words based on the sounds they hear in the word. Students hear phonemes within the word and try to match letters to the phonemes, but they do not have an

understanding of grapheme patterns and combinations to make sounds. An example of this in a sample from a student named Ellie was “Ellie used R and U to represent the entire words *are* and *you*,” (Bear et al., 2012, p.11). By the end of this stage, however, students have a strong phonemic awareness and can spell short vowel sounds, digraphs, and consonant blends in short words most of the time.

The third stage is the within word pattern stage. Students may stay in this stage longer than the letter name stage. The letter patterns and combinations are the main focus of this stage. Students will begin to look at vowel patterns that make long and short vowel sounds and more consonant blends. Students begin to learn about homophones where words may sound the same but be spelled with different spelling patterns. This stage is more difficult because there are so many different letter patterns that make similar sounds, such as the long o in *joke*, *goal*, and *throw*. (Bear et al., 2012).

The next stage is the syllables and affixes stage. “This represents a new point in word study when students consider spelling patterns where syllables meet and meaning units such as affixes (prefixes and suffixes),” (Bear et al., 2012, p. 13). During this stage students learn about how the vowels and roots of words change or stay the same when adding endings such as *-ing* or *-ed*. Students also learn about closed and open syllables where the first syllable either ends in a long vowel or ends with a consonant, which means the first syllable has a short vowel sound.

The final stage is the derivational relations stage. The main focus of this stage is to have an understanding of the base words and the roots of parts of words. Knowledge of the morphemes, or meaningful parts, that make up words help students to break longer words down into smaller chunks to be able to spell accurately. Not only does the morphemic knowledge help students spell longer words, but it also helps students to understand the vocabulary meaning of

unfamiliar words because they can understand chunks of the word to infer overall meaning (Bear et al., 2012).

It is important to recognize the student's spelling stage to inform instruction, and the spelling stages can help with reading as well. "Orthographic knowledge is considered by many to play an important role in literacy acquisition," (Apel, 2011, p. 592). When students are able to hear the sounds of words and match the letters, then they should be able to recognize the letters and match the sounds to them. If students have an understanding of letter patterns that work together to make certain sounds, then students should be able to recognize the learned letter patterns when they come across them in new words they are trying to identify in reading. Burt (2006) says "identification of a visually presented word is thought to involve matching an input letter sequence with a representation of the word's orthography that has been learned through experience with print," (p. 401). Martin-Chang, Ouellette, and Madden (2014) conducted a study to determine if poor spelling led to poorer reading. They found that students could more easily read words they already knew how to spell. They determined that the more skilled a student is in spelling, the more automatically the student will read the words without having to stop and use phonemic awareness and letter representations to sound out the parts of the word. The automaticity in reading those words makes reading more fluent, and constantly having to stop and sound out words takes up time and makes the reading choppy. When students can spell words and know patterns in their head, they don't have to spend as much time trying to recognize those patterns or words when reading because their brains have already stored it. A student must have a solid understanding of letter patterns and representations for sounds in order to spell a word correctly; however, in reading, students can use knowledge of patterns, context clues, and picture clues to help read a word.

Reading and Spelling Similarities

Word identification and spelling are such important foundational skills that students need to be explicitly taught strategies to help them improve in both areas. Because word identification and spelling require students to break words up by phonemes, the basis for both skills is phonemic awareness. Phonemic awareness will help students chunk the different sounds that come together to make up words, then students can match those phonemes to graphemes and grapheme patterns by spelling words. When students understand the grapheme-phoneme relationships, then students can identify words more easily. Starting with phonemic awareness skill building, relating it to letters and spellings can help with word identification instruction. “Phonological coding may contribute to word identification via a role in establishing orthographic representations,” (Burt, 2006, p. 401). It is important to understand that “their reading and spelling are related but not mirror images because the processes differ slightly,” (Bear et. al., 2012, p. 26). While students read, they can use context clues, picture clues, or surrounding words to help them identify an unknown word. When spelling a word, they have to use stored information to create it. Knowing this, students usually perform slightly higher in word identification over spelling accuracy. Students should be taught reading and spelling at their instructional level and spelling to build both simultaneously; however, the specific words they struggle to spell may not be the specific words they have difficulty reading, even though their spelling levels do correlate to their general reading ability. Those spelling in the letter-name stage are usually at a beginner reader level. Students spelling in the within-word pattern stage are transitional readers, meaning they are starting to apply those decoding skills and starting to have automatic word recognition. Students in the syllables and affixes stage are becoming intermediate strategic readers. The derivational relations stage is the highest spelling stage and

students in this stage are usually also more proficient readers. Even though the exact words they spell and identify may not be the same patterns, their general level in reading and spelling correlate and can be improved by using an integrated approach (Bear et al., 2012).

As mentioned earlier, spelling instruction usually consists of simply giving a pre-test at the beginning of the week, letting students practice words over and over and then test them at the end of the week; the words they are spelling are not phonemically related. Despite this common practice, the best way to teach spelling is through direct word analysis instruction. Harrington (1996) described the following:

Since spelling is the encoding of sounds found in oral speech, a child attempting to spell must be capable of word analysis. That is, he must be able to divide words into their component parts; and to do that he must learn to hear individual sounds in the order in which they occur in words; and he must learn to note and remember the letter representation of the sounds. (p. 23)

Students must learn how the sounds in words and the corresponding letters or letter patterns match up, and then the students need repetition and practice with instructional level patterns to build their orthographic knowledge. In Uddeme's (2014) research on the effects of direct spelling instruction, the findings reinforced the idea of targeted spelling instruction, where students are taught specific letter patterns based on the patterns students struggle with. In this research, students showed improvement not only in spelling, but reading areas as well.

Word identification and spelling instruction both require explicit instruction, and as previously stated, can be taught through an integrated approach to improve both areas. "Because fluent reading depends on accurate word recognition, instruction must place equal emphasis on rapid letter recognition, phonological awareness, and orthographic knowledge as well as on

semantic, morphological, and syntactic knowledge,” (Bashir & Hook, 2009, p. 198). Many times, word identification and spelling are taught separately; however, the findings of a study done by Cheek (1979) suggest that teaching decoding and encoding skills separately can actually impede student achievement in both spelling and reading. Based on this knowledge, a program for reading and spelling should “include not only the need for teaching the decoding and encoding skills simultaneously but also the need for systematic instruction in the ways sounds are represented instead of vocabulary lists which contain words which are phonemically unrelated,” (p. 386). Even though this is an older study, the findings remain consistent today that an integrated approach to teaching both word identification and spelling are mutually beneficial. Roberts and Meiring (2006) continued to study an integrated approach to explicit spelling instruction over teaching phonics through literature and students performed better when being taught strategies for recognizing letter-sound correspondence because they applied their learned knowledge to words when they were reading. Explicit instruction was the best method for both spelling and word identification.

One method for instruction done in a study that improved both word identification and spelling achievement was a word sort approach to word study. Joseph and Orlins (2005) said “word sorts are designed to help children examine, discriminate, and categorize words according to spelling and sound patterns,” (p. 73). Not only can sorting words help students with spelling, but it can also help with word recognition and vocabulary through analyzing morphemes and word structure. Word sorts were found to be better than regular phonics instruction because the students can physically manipulate words, create their own understanding, look for similarities and differences, and categorize words based on the word structure. Weiser and Mathes (2011) completed a study where they analyzed the best methods for teaching encoding strategies so that

they help boost spelling and reading. The researchers also found that the most purposeful instruction is “explicit and direct instruction in phoneme-grapheme correspondences with actual manipulation of tiles, plastic letters, or real letters; encoding and writing activities of these phoneme-grapheme relationships; word study; and guided practice of manipulating and writing of specifically taught sounds” (p. 195). Knowing what we know about spelling and word identification and how both skills can be improved by breaking words into chunks by phonemes, and then breaking words into graphemes and grapheme patterns to represent the phonemes, the sorts and physical manipulation in an integrated approach is a way for teachers to teach reading with spelling through the use of word sorts and word analysis. It is important that students can make the link for themselves between spelling and reading (Joseph & Orlins, 2005).

Summary

After reviewing the literature, it is clear that word identification is a necessary foundation for all readers, from emergent readers to experienced readers. It is evident that specific orthographic knowledge is learned from explicit instruction at a child’s developmental level and is a key component to successful word identification achievement. Through studies that have been done in the distant past and more recently, and after reviewing the literature, an integrated approach to teaching both spelling and word identification is the best method for instruction because students can make the connections through the different contexts. Word sorts are a suggested, effective method for driving this type of integrated instruction.

CHAPTER III

METHODS

The purpose of this study was to determine the effectiveness of teaching an integrated approach to spelling and reading instruction during the reading block to improve spelling achievement while not diminishing reading achievement. The comparative effectiveness of each approach was measured by three assessments to measure overall reading ability, word identification skills, and spelling accuracy using the Scholastic Reading Inventory, the Bader Graded Word Lists Inventory, and the Words Their Way Spelling Inventory.

Design

This study implemented a quasi-experimental design using a convenience sample comprised of fifth grade students from a Title 1 public school. The independent variable was a type of spelling instruction - teacher led explicit integrated encoding and decoding instruction or student independent memorizing practice for weekly spelling tests.

The dependent variables were spelling achievement scores on the Words Their Way Spelling Inventory, reading accuracy scores on the Bader Language Inventory Graded Lists, and Lexiles on the Scholastic Reading Inventory.

Participants

The participants in this study were fifth grade students from a low socioeconomic status, Title 1 school with an extremely high rate of students with free or reduced lunch. The school is in a highly transient neighborhood in a mid-size suburban area in the mid-Atlantic region. The majority of the school population is African American. The students in the grade level were grouped based on end of the previous year's reading levels using the Fountas and Pinnell Benchmark Assessment System (Fountas & Pinnell, 2010). The students were grouped into eight

groups, with group one being the lowest readers and group eight being the highest readers. Each class consisted of a low and a high group of readers. The experimental group consisted of students in group one and group five, which means the lowest readers and readers just barely on grade level. The control group consisted of groups two and six, which was comprised of the second lowest readers and on grade level readers. The experimental group contained fifteen students, with seven boys and eight girls. One of the students was Caucasian, twelve were African Americans, and two were Caucasian/African American mixed students. The control group contained eighteen students, with seven girls and eleven boys. Eleven of the students were African American, six were Caucasian, and one was Hispanic. Originally, there were sixteen students in the experimental group, however one student was excluded because his SRI score was too low to show up as a number score, which provides inconclusive data. He is also an outlier within the group and would skew the data. There were originally nineteen students in the control group, however one of the students was new to the class and therefore, was not there in time to collect all of the baseline data. The experimental group consisted of students in the researcher's class and the control group consisted of students in a fellow teacher's class.

Instrument

Students were given three different assessments in order to measure overall reading ability, word identification skill level, and spelling accuracy. Any words in the spelling inventory and reading and language inventory were not used in the spelling instruction to separate the assessment and instruction. The first assessment was the Bader Graded Word Lists Inventory. The inventory consisted of one list for each grade level, beginning at pre-primer which contained ten words that students at that level are expected to be able to read accurately. This is meant to be an informal assessment to assess word identification without the context clues from a passage.

Students were selected individually and given lists of ten words at a time. When they missed four or more words of a leveled list, they did not continue to the next list. The highest list, where students missed two words, was their instructional word identification grade level. However, the instructional word identification grade level was not used as the outcome measure for the study. For the purposes of this study, word reading accuracy was based off of a formula devised by this researcher. Students received a point for each word they read correctly. There is no reliability or validity data for the use of this score.

The second assessment was the Words Their Way Spelling Inventory which is a pencil and paper task, administered to students in a group. This assessment is used by educators to identify a spelling level for students based on the types of spelling patterns the student is successful with and the types of spelling patterns that are an area of weakness for them. It contains twenty-five words that range in difficulty from least difficult to most difficult for elementary aged students. Each level focuses on different types of spelling patterns. The Emergent level emphasizes choosing the correct letter for initial sounds in basic words. The Letter Name-Alphabetic level stresses choosing the correct letter for the final sounds in basic words, the short vowel sound, and digraphs (sh, ch, and wh). The Within Word Pattern level concentrates on consonant blends (mp, fl, tr, pl, dr, br, and sp), long vowel patterns (oa, ai, igh, vowel/consonant/e), and other vowel patterns (oi, er, ew, ar, ow, and or). The Syllables and Affixes level builds on the previous skills and adds on word endings (ing, ed, and ies), and unaccented final syllables (er, le, or, en, and ar). The final elementary level is Derivational Relations, which centers on harder suffixes (ure, ate, ent, ize, and tion), and Greek and Latin roots to build understanding. Each student's spelling instruction group was based on the level

they scored in and the skills being taught in the group, centralizing around the skills focused for that particular level.

Students received three scores from this assessment. The first score was Words Spelled Correctly out of twenty-five total words on the list. The second score was the Feature score. For each type of spelling pattern in the individual words, students can receive points, so even if they spelled a whole word incorrectly, they could get feature points if they spelled certain parts of the word correctly. This shows what students do know and what types of mistakes they were making. The third score was the combined score of the word and feature scores together.

The third assessment was the Scholastic Reading Inventory. This is an online assessment that gives students short passages or sentences where students have to answer multiple choice comprehension questions about the passage or fill in a vocabulary word in the blank of a sentence (i.e., cloze procedure). The assessment bases the difficulty of texts and questions on the ability of the student as they answer the questions. Students were able to choose three types of texts they would enjoy reading for the assessment. After completing the assessment, students are given a numbered Lexile level. The Lexile levels are matched to grade level equivalents to show reading achievement in comparison to other students within the grade level. This is a research based criterion-referenced test which has been correlated with many state assessments to determine reliability of reading assessment and six validation studies with 512,224 students in the sample to determine validity (Scholastic Inc., 2006).

Procedure

Students in both groups were given the Words Their Spelling Inventory as a whole group by their teachers. The researcher scored all the assessments. The students in both groups also took the Scholastic Reading Inventory on their one-to-one devices during the reading class

period. The assessments were scored by the computer. The Bader Reading and Language Graded Word Lists required the researcher to meet with each student from both groups individually. Each student had to read through the grade lists beginning at a pre-primer level until they met discontinue criterion. The researcher scored their lists.

One student who received instruction with the experimental group was excluded from the analyses because the student performed at the below reader level on the SRI, and one student who received instruction with the control group was excluded because the child was new to the school and there was missing data. Independent sample t-tests were conducted to verify that students did not differ significantly prior to the intervention. For all the variables except the SRI, the variances were significantly different between the groups. Consequently, group means for the variables other than the SRI were compared by unequal variance t-tests. On the SRI, the experimental group had a Mean score of 527.80 (SD = 319.44) and the control group had a Mean score of 667.89 (SD = 237.54) [$t(32) = 1.47, p = 0.15$]. On the Bader, the experimental group had a Mean score of 65.20 (SD = 23.46) and the control group had a Mean score of 76.63 (SD = 14.32) [$t(32) = 1.66, p = 0.11$]. For Words Spelled Correctly, the experimental group had a Mean score of 12.13 (SD = 7.43) and the control group had a Mean score of 15.26 (SD = 4.95) [$t(32) = 1.40, p = 0.17$]. For Features, the experimental group had a Mean score of 41.47 (SD = 15.50) and the control group had a Mean score of 48.47 (SD = 8.62) [$t(32) = 1.57, p = 0.13$]. For combined, the experimental group had a Mean score of 53.60 (SD = 22.68) and the control group had a Mean score of 63.74 (SD = 13.47) [$t(32) = 1.53, p = 0.14$]. Students in the experimental group were divided into five groups. The groups were based on their identified spelling level based off of the Words Their Way Spelling Inventory. Each group had a different spelling list and worked on a specific skill each week based on what skills they had mastered and the skills

not yet adequately developed. On the first day of the week, each group met with the teacher for about ten minutes. During this time, students were introduced to a word sort where they tried to identify a sound or letter pattern. With some prompting, the students sorted the words in the intended groups based on the sound or letter patterns they were focusing on for the week. Students identified any oddballs, words that did not follow the pattern, during this session as well.

On the second day of the week, students were prompted to hunt for words that followed their patterns during their silent reading time. Three of the five groups met with the teacher on the second day for about five to ten minutes to do a blind sort. This meant the students practiced spelling the words and categorizing the words in the correct letter pattern category. This was done with dry erase markers and whiteboards and sometimes with letter tiles. The idea was that students were building the words and understanding the patterns that would help them build more words in the future.

The third day followed the same structure as the second day. Students continued to hunt for words that followed their skill or pattern for the week and recorded the words they found in the correct categories, and the two remaining groups met with the teacher to do blind sorts.

The fourth day, all students met with the teacher. This was sometimes done whole group and sometimes in small groups. The teacher checked in and looked at the word hunts where students recorded the words they found. During this time, if any students were struggling to find words that fit the categories, the teacher conferred one on one or in small groups to read through texts and identify words that followed the pattern or rule. This was a time to resolve any misconceptions that may have been recorded through the independent reading practice.

The fifth day was the day students received their spelling test on the words they were sent home to practice on the first day of the week. Each week, the students moved on to the next skill. All of the instruction took place during the reading and/or reading intervention block of time to integrate the spelling and reading instruction.

Students received words for them to practice at home for homework each night. The first night of homework students practiced writing the words in the sort. The second night was sentences. Sometimes they had to create the sentences, other times they were given sentences with a choice of words, and they had to pick the correct word and write it down to integrate reading and spelling. The student gained some vocabulary knowledge, and then had to practice spelling the word correctly on the line before the sentence. The third night was different based on the complexity of the group. Some groups received a word search; some groups alphabetized the words, while other groups continued the skill with new words. The third night was generally a traditional spelling practice of some sort. The fourth night, students completed a pre-test to prepare for the weekly spelling test the following day. This packet was self-guided to provide opportunities for individual practice at home.

In the control group, students were broken into five groups based on the same Words Their Way inventory and given the same individualized spelling packets for homework based on the students' spelling levels as in the experimental group. However, the students in the control group did not receive any instruction regarding the words on their lists. Students were expected to independently complete the homework assignments and take the spelling test at the end of the week. During the first half of the year, students in this group were introduced briefly to their word patterns on the first day of the week, but for the timeframe of this study, the students received no direct instruction from the teacher.

The students' performances on the dependent variables were compared by independent samples t-tests.

CHAPTER IV

RESULTS

The purpose of this study was to determine whether there was a statistically significant difference in spelling, word reading accuracy, and overall reading achievement among a group of fifth grade students participating in an integrated spelling intervention, opposed to students not in the intervention. Reading achievement was measured by the Scholastic Reading Inventory, spelling achievement was measured by the Words Their Way Spelling Inventory, and word identification achievement was measured using the Bader Graded Word Lists.

Levene's Test for Equality of Variances revealed that the variances for the Bader, Feature, and Combined scores were significantly different. Consequently, the independent samples t-tests for these variables were adjusted for unequal variances.

The two groups did not differ significantly differently on any of the variables as seen by the following statistical results: SRI (Intervention Mean = 595.80, SD = 308.69; Control Mean = 674.79, SD = 222.35) [$t(32) = .87, p = .39$]; Bader (Intervention Mean = 74.40, SD = 22.76; Control Mean = 79.68, SD = 13.72) [$t(32) = .79, p = .44$]; Words spelled correctly score (Intervention Mean = 13.80, SD = 7.13; Control Mean 16.11, SD = 5.33) [$t(32) = 1.08, p = .29$]; Feature score (Intervention Mean = 44.47, SD = 15.91; Control Mean = 49.89, SD = 8.39) [$t(32) = 1.20, p = .25$]; and Combined score (Intervention Mean = 58.27, SD = 22.74; Control Mean = 66.53, SD = 13.68) [$t(32) = 1.24, p = .23$] (see Table 1). Consequently, all the null hypotheses regarding differences in post SRI, Bader, words spelled correctly, feature score, and combined score failed to be rejected.

Table 1*Means, Standard Deviations, and t-Test Results for Outcome Variables*

Score	Group	Means	Standard Deviations	t-statistic
SRI	Intervention Control	595.80 674.79	308.69 222.35	.87 (NS)
Bader	Intervention Control	74.40 79.68	22.76 13.72	.79 (NS)
Words Spelled Correctly	Intervention Control	13.80 16.11	7.13 5.33	1.08 (NS)
Feature Score	Intervention Control	44.47 49.89	15.91 8.39	1.20 (NS)
Combined Score	Intervention Control	58.27 66.53	22.74 13.68	1.24 (NS)

Intervention Group N = 15

Control Group N = 19

NS = non-significant at $p \geq .05$

CHAPTER V

DISCUSSION

The results of this study failed to reject all three null hypotheses which stated there would be no statistically significant difference in spelling achievement, word reading accuracy, and overall reading achievement after students received small group explicit integrated encoding and decoding instruction. This means that the intervention group did not score higher than the control group on spelling or word reading accuracy as a result of the intervention. However, they also did not score lower on reading than the control group, which addresses the concern as to whether spending part of the reading time on spelling takes away from reading achievement.

Implications of the Results

Based on the results of the study, this intervention may not be sufficient for improving overall spelling and word identification achievement. The intervention did not appear to help students apply the strategies learned during the intervention to spelling new words and identifying words in reading.

Observational data, however, suggested some benefits from the intervention. This researcher observed that students from the intervention group were becoming more confident when taking their weekly spelling tests. Students also began turning their spelling homework in more often, and many students made improvements in their spelling grades. Students in the control group maintained the same level of confidence and turned in less homework as the weeks went on. Given this information, this intervention may help improve weekly spelling test grades and build confidence in spelling for students. The confidence building in their spelling may have led to more students completing their homework assignments. Further research on a larger scale needs to be done to verify this.

Even though the scores were not statistically significantly different, this researcher observed there were improvements in overall spelling and the use of spelling strategies within the classroom. Many of the students who made the most growth were the lower reading students. The strategies taught for spelling directly helped them decode new words as well. Although not assessed statistically, the researcher's impression from the review of the data is that less growth occurred among the higher readers; therefore, this intervention may be more helpful for lower spellers and readers than average and above average spellers and readers.

An informal review of the data suggests that the lower readers made a larger amount of growth in the ten weeks of the intervention than the other semesters in previous years and this year. Based on this observation, there may be more growth in spelling and word identification if the intervention ran for a longer duration of time.

During the intervention, the researcher observed that students seemed to like the activities that took place in the small group instruction. Students, for the most part, were engaged in the learning activities. Students applied the strategies independently during their reading time when they completed word hunts and actively participated in small group discussions. This intervention used a combination of technology and hands on activities. Students were more motivated to use the technology for their sorts; however, they were more successful with the hands on activities. This intervention is a motivational tool for teaching spelling and is an effective method for delivering instruction.

Based on the researcher's observations, the intervention is engaging for students and appears to be more effective with lower readers and spellers. Therefore, this researcher recommends this intervention for students who are struggling with spelling and decoding. Applying this intervention to an entire class was difficult because it took a lot of time to prepare

five different groups worth of activities and word sorts. It also was challenging to get to all the groups and not take up too much time in the reading block. However, if the intervention was only implemented to targeted students, it may lessen the workload for the teacher and be easier to implement during the reading block. Based on the score results, students did not make less growth in reading than the control group, even though part of the reading block was assigned to the spelling intervention. This researcher suggests that this intervention will not impede student growth in reading and may help lower readers improve overall.

Theoretical Implications

The results of this study are mixed in support of the theory that it is important to integrate explicit reading and spelling instruction. Based on observational data, students were engaged in instruction, which would support the idea of using word sorts as an effective intervention tool for explicitly teaching reading and spelling. Although not analyzed statistically, review of data suggests that low achieving children appeared to make more gains than higher achieving students. Students who are lower achieving benefited from learning the basic letter patterns that create sounds within words. This observation indicates that the integrated approach supports the theory of building word identification and spelling simultaneously for those reading and spelling at a lower level. However, the control group was not statistically different from the intervention group after the intervention was completed. This means this study overall did not support the theory that integrating explicit reading and spelling instruction would improve spelling and word identification achievement. The students in the intervention group generally made similar gains to the control group who had no explicit integrated instruction. Many students were higher achieving in reading and spelling and those students already had a basic understanding of letter patterns and how those patterns correlate to sounds. The patterns they were working on were

more complex than those in the lower achieving groups. Because of the major difference in reading and spelling abilities within the groups, further research should be done to truly identify whether this intervention supports the theory of integrating explicit reading and spelling instruction to improve both content areas, and whether the level of achievement affects the success of this type of intervention.

Threats to Validity

Throughout the course of this study, many factors could have hindered the validity of the results. The first concern that threatens external validity was the study did not have random assignments to the intervention and control groups. Being in a school setting, the control group was one class and the intervention group was another class. The students in those two classes were already placed in the beginning of the school year based on reading level. Each classroom had two distinct reading levels, a high and a low. While the pre-test scores were not significantly higher for the control group, the students in the control group were in two higher levels than the two reading groups in the intervention class. Therefore, the students in the slightly higher class may have performed better because of their higher achievement in reading already, in comparison to students reading at a lower level. Random assignments to groups would have been preferable to reduce pre-existing group differences.

Another threat to the validity was the sample size. By having small samples, the study had reduced power. In addition, small samples reduce the generalizability of results.

A further limitation to the generalizability of the results is that the subjects were from two fifth grade classrooms in one school population. They may not adequately represent all fifth grade students. In addition, results cannot be generalized to younger or older populations.

Another major limitation that threatened internal validity was the length and consistency of the intervention. The intervention ran for ten weeks. A longer duration of time could have allowed more time for growth and more skills taught. In addition, there were many factors within the school setting that interrupted the consistency of the intervention occurring. A couple of students in the intervention group had many absences from school. Many students participated in orchestra and band, and they were pulled for practice during the reading time once or twice a week. Based on this knowledge, the consistency of the intervention was compromised, and instruction time was lost for those students. Another factor that affected the regularity of the intervention were school wide events that interrupted or replaced the reading time. During the ten-week intervention time, there were eight assemblies or activities during the reading block, which made it so the intervention could not take place. Additionally, the ten weeks were not back-to-back. The first two weeks began and then the students had to partake in state mandated testing. Ten days of testing affected the intervention time and therefore, the intervention did not take place. There were also three days in which teachers had to participate in professional development or IEP meetings during the reading time, stopping the intervention from taking place those days. There were so many scheduling conflicts that there were rarely weeks in which the students had explicit instruction for all five days. Had students received consistent instruction for ten back-to-back weeks, the outcomes for student achievement in the intervention group may have been significantly higher.

The last major threat to validity was student behavior within the classroom. There were many major behavior concerns among the students within the intervention group. The intervention was taught during the regular reading block within the classroom. Many times, while the researcher taught the intervention, she had to attend to behavior difficulties occurring

with students in the small group and outside the small group. These behaviors could have influenced the effectiveness of the instruction and the attention of the students in the intervention. There were some students who refused to work in the intervention group some days, or their behavioral decisions required them to be removed from the classroom, therefore missing instruction of the intervention. This intervention may have had more successful results in a quieter setting and separate from the general classroom where students would be less distracted by their peers. The results may have also had different outcomes for students that do not have behavioral concerns.

Connections to the Literature

Many studies have already been done to research best methods for instruction in spelling and reading. The study completed by Martin-Chang et al. (2014) analyzed how poor spelling linked to poor reading. This showed that the two skills were interrelated. Even in the findings of the study done by this researcher, the links between spelling and word identification were similar. To improve one significantly, the other would improve according to the research done by Martin-Chang et al. Neither the spelling nor the reading scores were statistically significantly different; therefore, the one did not improve over the other.

Roberts and Meiring (2006) studied a similar integrated approach to this study that also focused on explicit spelling instruction. This study found that spelling and word identification improved. The difference between this study and Roberts and Meiring's study was that Roberts and Meiring had a much larger sample group and their students were in first grade. This means they were reading at much lower level than most fifth grade students in this researcher's study. The results of Roberts and Meiring's study compares to the students who were performing lower in reading in this study, who also made more improvements in spelling and reading, after

receiving the intervention than students who already had more foundational reading and spelling skills.

Weiser and Mathes (2011) conducted a meta-analysis in which they determined that explicit and direct instruction was the best method for improving spelling and reading. The major difference between their study and this researcher's study was that Weiser and Mathes analyzed multiple studies done by other researchers to arrive at these results. Compilations of eleven studies were examined to determine this outcome, and this researcher completed one study and analyzed the data. By looking at multiple studies that met a similar criterion for methods of research, a larger sample and larger scope of participants were analyzed. Therefore, the findings of Weiser and Mathes are probably more representative of the efficacy of the intervention than the current study.

Implications for Future Research

It is recommended that researchers continue to conduct future studies to determine a more accurate analysis of integrating spelling instruction with reading. There were many threats to validity in this study that affected the results, and it would be interesting to see future studies that controlled some of these variables. One way to avoid problems with pre-existing differences and unequal variances in grouping is to have random assignments of subjects to groups. This is difficult to do in an education setting because students are grouped in classes based on school wide decisions. It would also be interesting to analyze the difference between readers reading at a lower reading level and at a higher reading level to observe how the intervention affected their growth in reading and spelling. Similarly, a study could be conducted where the sample groups are pre-determined by reading level and have students of different grade levels who are reading at a similar reading level grouped together to identify if age is a factor in spelling and reading

growth, or if reading development level affects the amount of growth with this type of intervention.

Another recommendation for future studies would be to conduct this exact study in the beginning of the school year as opposed to the end of the school year. Based on the researcher's observations, there are more conflicts with weather, testing, and events towards the end of the school year. There may be more consistency in the schedule towards the beginning of the year to achieve accurate results to the effectiveness of the intervention. This study could be done in the beginning and the end of the year to determine if students tend to make more growth with this intervention in the beginning of the year compared to the end of the year.

It would also be fascinating to complete this study with sample groups from different schools in different types of socio-economic areas to determine the overall effectiveness of the intervention, and to be able to generalize the results to the greater population. Behavior was a concern for how it affected the outcomes of the study. It would be interesting to run the study with an integrated spelling intervention within the classroom, and outside of the classroom to determine if the general classroom climate is an ideal setting for this intervention to take place.

Conclusions

This study analyzed the effectiveness of an integrated spelling and reading intervention on spelling, reading word accuracy, and overall reading achievement. The results of this study determined that students who received this intervention did not significantly improve their spelling, reading word accuracy, or overall reading achievement compared to the control group who did not receive the intervention. However, the researcher's observations of the study suggest that students who were performing at a lower reading level made more growth in spelling and word identification than students performing at a higher reading level. Future

studies need to be conducted to provide more evidence for this observation. Since previous research has suggested that explicit instruction is effective and since there were validity concerns in the current study, it is important that research be continued in the field to further determine the circumstances in which it is or is not effective. If future research can clarify the circumstances in which the intervention improves spelling, word identification, and reading achievement, then this intervention style would be a great method for teachers to use within their classrooms when deciding what technique to use for teaching spelling.

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