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Effects of Word and Picture Sort Instruction on a Struggling Third Grade Student

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Effects of Word and Picture Sort Instruction on a Struggling Third Grade Student

By

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Abstract

This is a case study involving a nine year old female student. The researcher sought to determine if an intervention with the instructional use of word and picture sorts would help the student improve her skills in spelling. Intervention results were consistent with the research upon which it was developed. The intervention was successful based on the increase in scores from the pre- to post-spelling assessment.

Acknowledgements

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Chapter One: Introduction

The purpose of this case study was to determine if the instructional use of word and picture sorts would help a struggling student improve her skills in spelling as evidenced by a pre and post test comparison of a spelling inventory. The child who was the focus of this case study will be referred to by the pseudonym JR. JR's strengths and needs were at the forefront of the researcher's mind when developing the spelling intervention that is described in this case study. In addition to keeping her strengths and needs at the center of the intervention, it was also necessary to ensure that it was aligned with the Wisconsin Common Core State Standards (CCSS), and be in compliance with The Individuals with Disabilities Education Act (IDEA).

The Participant

JR, the subject for this case study, was a nine year old, third grade Hispanic girl. She attended a bilingual elementary school, and received instruction in English and Spanish from her primary teacher on an alternating biweekly basis. She received English as Second Language (ESL) services during her literacy block and during her class's writing block. The researcher and author of this study was the ESL teacher for JR's third grade class. JR's native language was Spanish, and her parents spoke no English, so Spanish was the only language spoken in her home. JR was an English Language Learner (ELL) with a language proficiency score of 2.7. A score of 1 indicates a beginning level of language acquisition, and level 6 is fully proficient in all four of the language domains: speaking, listening, reading and writing (World-Class Instructional Design and Assessment, 2011). JR was born in the United States and had been receiving ESL services since kindergarten. ELL students nearing the end of the third grade with similar circumstances typically have scores closer to 4.

JR was originally referred for special education in October of 2005 due to concerns regarding communication delays. After the initial referral and testing, JR qualified for speech and language services, and she received services until May of 2008. In the September of 2008, she was again referred for special education due to suspected delays related to Specific Learning Disability and Other Health Impairment, but she did not qualify. JR was referred a third time for special education in September of 2010 due to concerns regarding academic delays and difficulties in retaining and using previously taught skills. Her classroom achievement was severely delayed in all areas of literacy and in certain areas of math according to her classroom teacher. In November of 2010, JR qualified for special education and met the criteria for a Specific Learning Disability and Speech and Language Impairment. Her IEP indicated that she would receive specialized academic instruction in the areas of reading, writing and math as well as specialized speech and language instruction.

The Participant: Strengths and Needs

The participant in this case study had certain strengths as a student. She had excellent attendance, and she even stayed after school for an after-school program, which was organized by the Boys and Girls Club of Milwaukee. She was also a very social girl (much more so with peers than adults), and she had many friends. She was much more willing to engage in academic activities when she was working closely with one of her friends in the class.

The participant had needs in all areas of literacy including phonological awareness, decoding, sight-word recognition and above all, spelling. Although the participant was in the third grade, she was exhibiting literacy skills (in English *and* Spanish) that were typical of a student in the later part of K5. She was often unable, and to an even greater extent, *unwilling* to participate in many classroom activities. She spent much of her time in class coloring in her

notebook. She was very resistant to engaging in activities that were a challenge for her. She would frequently search for any excuse that would allow her to avoid academic tasks. Often times, she would claim that a task was too hard for her before even looking at the activity, or she would make comments claiming that she was not "smart enough" to do the activity. When she did decide to engage in an activity that was challenging, she became frustrated very easily. Many times, she would cover her face with her hair and simply refuse to do anything at all. It was the observation of the researcher that when she behaved in this way, many adults at the school would simply allow her to do some other task from what the class was doing, and the alternative activity was usually much easier and required little higher level thinking. There were various teachers at the participant's school who worked with her, including the researcher of this study, who were all in agreement that because of all this, she had developed a strong sense of learned helplessness over the years.

It was because of these self-defeating tendencies and her extensive deficiencies in literary skills, particularly spelling, that the researcher considered JR to be a prime candidate for this case study. The purpose of the study was to increase the participant's spelling abilities through the instructional use of word and picture sorts. Based on his own research into word sorts and other related topics, the researcher made the hypothesis that an intervention that utilized word and picture sorts would improve the participant's abilities in spelling as evidenced by a comparison of a pre and posttest spelling assessment. Due to her status as a student with a learning disability, it was necessary that the intervention developed for the participant was in compliance with IDEA, and met the goals of her IEP.

Connection with the Individuals with Disabilities Act (IDEA)

IDEA mandates that students receive services that are in alignment with their Individualized Educational Plan (IEP) (Appling & Jones, 2008). In addition to minutes for speech, mathematics and writing, JR was supposed to be receiving 30 minutes of specialized instruction in the area of reading every day. Her IEP reading goals were to increase reading skills from K5 to a beginning 1st grade level by demonstrating phonemic awareness, the ability to decode words, and to develop automaticity with instructional-level sight words. Unfortunately, JR was not being serviced in the manner indicated on her IEP because, among other things, her school did not have a bilingual special education teacher. This was another factor the researcher took into consideration when choosing the participant for this case study. Although the researcher was not yet licensed to teach special education at the time of JR's intervention, the present case study was one requirement in a program that would lead to special education licensure. In this respect, her IEP goals for reading were being implemented as faithfully as the situation at JR's school would permit.

Another provision of IDEA requires that instruction for students with learning disabilities take place in least restrictive environments (Appling & Jones, 2008). The intervention insured that JR did receive services in a least restrictive environment. Although JR's IEP indicated that she would spend a portion of her day outside of the mainstream classroom, the intervention in this study took place in individual settings *and* in small groups with students who did not have learning disabilities. This allowed for social learning, which was beneficial for JR, as she learned well from her peers, and was motivated by her desire for these social interactions. In addition to being in alignment with IDEA, it was necessary that the intervention be aligned with the CCSS.

Connections to Wisconsin Common Core State Standards

JR's developmental literacy skills were at the K5 level. Because of this, the researcher incorporated Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) from K5 to 1st grade when designing her intervention. The entire premise of word study, the framework from which JR's intervention was conceived, is based on the idea that students need to be taught "where they are at," so to speak. This is why the researcher used standards from K5, 1st, and 2nd grade rather than 3rd grade, which was JR's grade placement at the time of the intervention. The standards were taken from the phonological awareness, phonics, and word recognition categories, and are as follows:

The K5 CCSS:

1. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (CVC) words.
2. Associate the long and short sounds with common spellings (graphemes) for the five major vowels

1st grade CCSS:

1. Distinguish long from short vowel sounds in spoken single-syllable words
2. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends
3. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words
4. Know the spelling-sound correspondences for common consonant digraphs
5. Know final -e and common vowel team conventions for representing long vowel sounds

2nd grade CCSS:

1. distinguish long and short vowels when reading regularly spelled one-syllable words

Each of the previously mentioned standards addressed an area of need and was incorporated into the intervention designed for JR. All of the CCSS are rigorous, research and evidence based, aligned with college and work expectations, and internationally benchmarked (National Governors Association Center for Best Practices & Council of Chief State School

Officers, 2010). It was with this knowledge, as well as knowledge of JR's literacy needs, that the researcher designed the present intervention and case study.

Conclusion

This chapter sought to describe JR as a learner, highlighting her strengths and needs. These strengths and needs were discussed in terms of their relation to the Wisconsin Common Core State Standards. It also demonstrated how the intervention provided for JR was in alignment with the principles of IDEA. The following chapter discusses the researcher's own theoretical perspectives for teaching literacy, and how research of existing studies were used to shape the intervention that JR participated in. Before this, however, a glossary of important terms that appear in the study will be provided.

Glossary of Key Terms

The Individuals with Disabilities Act (IDEA): is a federal law in the United States that mandates how states provide early intervention, special education, and related services to children with disabilities. This act protects the educational needs of children with disabilities from birth to age 21(Appling & Jones, 2008).

Individual Education Program (IEP): Under IDEA, public schools must create an IEP for every student who meets the state and federal eligibility requirements for having a disability. This program develops individual educational goals for the child and sets up supports, accommodations, and modifications to help the child meet these goals in the least restrictive environment (Appling & Jones, 2008).

Word Sort: an activity in which students group words into categories. Students compare and contrast letter-sound patterns within and across categories. The sorts are usually cued by key words placed at the top of each category. An essential component of word study (Bear et al., 2008).

Chapter Two: Theoretical Perspectives and Related Research

There are a wide variety of views regarding the most effective way to teach literacy and its various components. It is necessary for educators to reflect deeply upon these various theories when developing their own personal theoretical perspectives of literacy instruction. Educators must do this in order to provide their students with literacy instruction that is research-based, and above all, effective. In this chapter, the theoretical perspectives of literacy instruction that serve as the basis for this case-study will be described. The second portion of the chapter will consist of reviews of published research studies that relate to the instruction of spelling and all other aspects of literacy through interventions that contain elements of word study such as word sorts. These studies serve as the foundation, and provide support for the development and implementation of the intervention contained in this case-study.

Theoretical Perspectives

In many fields of knowledge there exists a tension between the practitioners in the field and those who are concerned more with the research or theory of the discipline. The field of education is one that is not immune from this tension. There are educators who hold the view that educational theorists and their views can be sometimes be divorced from the reality of the actual *craft* of teaching, and that educational theory is not something that classroom teachers need to preoccupy themselves with. I believe that such views are misguided, and that the relationship between theory and practice is very important. Teachers who have various educational theories internalized possess larger bases of knowledge from which to draw upon**.** When "teachers understand the full range of theories from which instructional strategies stem, they can select those interventions that best suit the particular teaching situation, thus optimizing the effectiveness of their instruction" **(**Tracey & Mandel Morrow, 2006, p.5). The purpose of the

following subsections is to illustrate the interconnectedness between educational theory and practice in the present author's own instruction. These overarching theories and beliefs also constitute the foundation of the intervention plan that was developed for the student in this case study.

Social Development Theory of Learning

One underlying philosophy that guides all aspects of my instruction is rooted in Lev Vygotsky's social development theory of learning (Vygotsky, 1978). As its title suggests, one important aspect of this theory asserts that learning occurs during social interactions. Learning can then be seen as a collaborative process involving the teacher and all the students in a class. Important to his social development theory is the concept of what he referred to as the more capable peer (Vygotsky, 1978). Given the immense popularity and importance of Vygotsky's work, scholars from a wide variety of fields have adopted his ideas and have even expanded upon them over the decades. While Vygotsky originally used the term *more capable peer* when referring to any person who has a better understanding than a prospective learner, the term more knowledgeable other (MKO) has now become preferred and more widespread. The "job" of the MKO, then, is to know the students' level of development, and shape instruction slightly beyond their development (Antonacci, 2000**)**. In Vygotsky's theory, the zone in which optimal learning occurs is called the zone of proximal development (ZPD), and it is important for instructors to teach and scaffold within their students' ZPD. The basic concept behind the ZPD is that for optimal results to occur, teachers need to instruct students at the level where independence is emerging, thereby scaffolding students, which allows for continuous progress (Vygotsky, 1978).

Vygotsky's social development theory of learning is a theoretical perspective that informs my beliefs about how children learn best. Instruction grounded in this theory is

appropriate and effective for all students, but this is especially so for students with learning disabilities for whom scaffolding is absolutely essential. The intervention designed for this case study incorporates the principle components of Vygotsky's theory. The word sorts, which were at the root of the intervention, allowed the researcher to use only words and concepts that were within the participant's zone of proximal development. In addition, word sorting requires continuing interaction between teachers and students. This close interaction insured that the participant was always being scaffolded by a more knowledgeable other.

Literacy Acquisition is Developmental

Research has shown that there is a strong relationship among reading, writing and spelling development. It has also been shown that these separate, yet related, aspects of literacy develop in predictable and stage-like progressions, the components of which have been charted out for the benefit of instructors (Bear, Invernizzi, Templeton, and Johnston, 2008). While the different stages of literacy development and their accompanying characteristics are not exact, and cannot always predict the progression of every single individual one hundred percent of the time, they have been formulated based on empirical evidence through scientific studies (Bear et al., 2008). There have also been intervention studies that have shown how supplemental spelling instruction has the power to increase many aspects of students' literacy development including reading tasks such as oral reading and silent reading comprehension, in addition to spelling. Bear et al., (2008) describe various studies showing that first graders' invented spellings were a "better predictor of end-of-grade reading than a standardized reading readiness test," and that in first through third grade, "spelling can be the most consistent predictor of reading achievement" (p. 20). Yet another study observed that "practice at spelling helps reading more than practice at reading helps spelling" (Bear et al., 2008, p.20).

The spelling intervention developed for the present case-study was heavily influenced by the ideas presented above. Word study activities were used to ensure that the activities would coincide with the developmental stage that the participant occupied. The categorizing that would take place would allow the participant to compare and contrast aspects of the English language in order to make orthographic and phonological generalizations that could be applied to new words that would be encountered in reading or when spelling.

Attitude Influences Learning to Read and Write

One potential, or even common, challenge of teaching students with learning disabilities is the issue of attitude and motivation as they relate to teaching and learning. Students with special needs have often experienced repeated failure in school, both socially and academically, which can severely damage one's self-image, and thus impact one's learning. Teachers must take seriously the influence that attitude and motivation have on learning. To deal with these issues, as an educator, I draw upon a model created by Grover Mathewson (1994), which describes the influence that attitude has on learning. His model is quite complex, and for our purposes here, it will only be necessary to highlight certain elements of his model. Mathewson's model is often written to describe the influence of attitude on reading. However, as we have already seen, reading and writing are quite interrelated, particularly in the early stages of literacy acquisition.

In describing how one's attitude influences reading or writing, Mathewson's (1994) model employs various key terms**,** one of which is called persuasion. Persuasion is divided into two parts: central route, and peripheral route persuasion. These two forms of persuasion are the two ways in which a teacher can attempt to get a student to do, or want to do, a given task. Central route persuasion "relies on cognitive processing of the content of a persuasive

communication (Mathewson, 1994). Essentially, such communication by the teacher is designed to make the student believe that completion of a task will somehow benefit him or her in the future. Peripheral route persuasion, on the other hand, consists of cues that evoke feelings in a student, which are meant to prompt the student to engage in some task. Mathewson (1994) claims that teachers may benefit by combining central *and* peripheral route persuasion when attempting to motivate students to engage in a given literary task.

Another important term in Mathewson's (1994) model is cornerstone concepts. Cornerstone concepts include values, goals, and self-concepts, all of which "guide (or fail to guide) formation of people's attitudes and ultimately their intentions and behaviors" (Mathewson, 1994, p. 1447). Mathewson (1994) suggests that the most enduring reading (or writing) interests are centered upon cornerstone concepts. Given this knowledge, it is reasonable for teachers to nurture their student's cornerstone concepts when teaching reading and writing. As an instructor, I always try to remain cognizant of the importance of persuasion and cornerstone concepts when teaching, particularly those with learning disabilities.

Summary of Theoretical Perspective

The three models or theories of instruction that have been outlined above are some of the elements that provide the theoretical foundation of this case study. They form the basis for the design of the intervention in the current case study. The next section of this chapter will link existing research and literature to the intervention, which will give further support to its premise.

Related Research

The reviews of the studies in this chapter provided a foundation for the intervention implemented in this case study. They all involved interventions that were based on word study with the goal of increasing students' skills in various aspects of literacy, primarily spelling.

Fresch and Wheaton (1992) conducted a study to determine if instruction using open word sorting would give students strategies that they could transfer over to their spelling when engaging in authentic writing tasks. The teacher adopted open word sorts as her method of teaching, and the two central questions that guided their study were as follows: 1) would the children improve in conventional spelling? 2) would the children have more strategies available to them when inventing spellings? The researchers hypothesized that there would be a significant difference in the achievement of the students in terms of spelling skills.

The treatment, or independent variable in the study was the spelling instruction that the teacher gave to her students, which consisted of open word sorts and related activities using the same words from the sorts.

The results of the treatment were observed in two ways; thus there were two dependent variables. One dependent variable was the student scores on the Qualitative Inventory of Word Knowledge **(**Schlagal, 1992). This test allowed the examiners to analyze students' spelling attempts, and to categorize the students into hierarchal developmental literacy levels as described by the creators of the test. The researchers gave this test as a pre and posttest as a way to measure progress in the students spelling**.**

The second dependent variable consisted of three common writing samples that were collected over the school year in spaced intervals. The writings were examined to see how, or if, the knowledge learned in the open word sorts (the treatment) carried over to authentic writing tasks. The researchers did not indicate what assessment tool they used to measure the changes in the student's writing.

The participants of this study were all of the students in the third grade teacher's class: Fourteen boys and eight girls for a total of twenty two students. The school was located in a suburb of a large Midwestern city.

Before the intervention or the treatment of the study commenced, the examiners gave the Qualitative Inventory of Word Knowledge as a pretest. On this pretest, five children fell in to the Letter Name stage, thirteen students fell into the Within Word stage, and four children were labeled as being in the Syllable Juncture stage. In the hierarchy of spelling development, the Letter Name stage would be the lowest of the three, and the Syllable Juncture stage would be the highest.

The actual intervention contained various steps. Each week, during writers' workshop, the instructor held individual or small group conferences to observe the inventive spellings of the students. Based on these observations, the instructor picked fifteen high frequency words containing letter/sound relationships that the instructor felt needed to be studied, and the students were given these fifteen words to sort during the week. The teacher also picked an additional list of fifteen words which used the same letter/sound patterns as the original fifteen words. These words were "banked" and were available for the children to use for individual word lists and activities.

The word sorting activity took place individually, or in small groups. The students sorted and categorized their word cards based on common sounds. The instructor served merely as a facilitator during the word sort activities, and there was no direct instruction.

After the word sorts, the teacher engaged the students in a whole group session in which she sorted thirty words from the week on the chalkboard based on the correct letter/sound

patterns. After a class discussion, the students wrote a description and/or reflection of what they had learned about the spelling patterns in their notebooks.

The students also engaged in two reinforcement activities during the weeks in which the instruction was taking place. One activity was the creation of a short text in which the students could use the words from their lists in authentic writing tasks. The other reinforcement activity was an open word search. For this, students were allowed to search all available texts for words that used the same sounds or spelling patterns as the words from their lists.

As noted earlier, the results of this study were determined in two ways, one of which was the pre and posttest scores on the Qualitative Inventory of Word Knowledge. On the pretest, five children fell in to the Letter Name stage, thirteen students fell into the Within Word stage, and four children were labeled as being in the Syllable Juncture stage. The posttest scores showed marked improvement in scores. On the posttest, there were no students that remained in the Letter Name stage. Seven students moved into the Within Word stage, and fifteen students ended in the Syllable Juncture stage.

The second way that success was to be determined in this study was the examination of the changes in students' writings over time, though the researchers did not indicate whether or not they used a particular tool or rubric to assess these writings. They found that there were positive changes in students' writings over time, and that the changes fell into four categories. The first was that the students were paying more attention to all the sounds when attempting to spell new words towards the end of the treatment. In the beginning of the study, many sounds and syllables were left out of inventive spelling, but this decreased as the intervention progressed. The examiners also observed that the students were taking bigger risks in attempting to spell new words. Towards the end of the study, the students began to experiment with longer,

more complex words. A third change that was observed by the examiners was that the children developed a better awareness of words, and often found words in other texts that were like one of the patterns studied. The fourth and final observed change in the students was their overall metacognizance about their learning of words. According to the examiners, the students were better able to articulate their shortcomings as well as their evolving understanding of words and how they worked by the end of the study. This study sought to determine if a word sorting intervention would improve student's conventional spelling, as well as provide them with additional strategies for inventing spellings. In the following study, a researcher conducted a study that examined the effects of word sorts in *combination* with word box instruction.

In her study, Joseph (2002) examined the effectiveness of combining word box and word sort instruction on word identification and spelling performance for a sample of three children with mental retardation. The researcher used a multiple baseline design to measure the students' progress over time and the extent to which the progress was sustained after the instruction was completed.

The independent variable in this study was the instruction that the examiner provided to the three students. The instruction consisted of word box and word sort activities, and will be better described when the procedures of this study are explained below.

The dependent variable was the number of correctly read or spelled words on word identification and spelling probes. The word identification and spelling probes were ongoing and were employed during three stages of the study: 1) baseline 2) instruction 3) maintenance. In total, there were twenty word identification and spelling probes throughout the study.

The three participants in this study possessed mild retardation and attended an urban school district in Ohio. Karen was a nine year old African American female. Ron was a ten year

old African American male, and Tara was a ten year old Caucasian female. The three students were receiving cross-categorical special education services in a classroom for children with mental retardation and other developmental delays. The students were selected to participate in the study based on three factors. The first was an observed difficulty in reading and spelling basic consonant-vowel-consonant (CVC) patterned words during classroom lessons. The second factor was students' work samples, and the third was the results of a screening of reading proficiency containing CVC words.

To choose the words that would be used for subsequent instruction, the examiner, or instructor, screened the students using a list of one hundred words that contained the CVC spelling pattern. The screening process measured the word identification and spelling abilities, and the same words were used for both skills for a given probe. On the initial screening measures, Karen read 30% of the words and spelled 20% of the words accurately. Ron read *and* spelled 20% of the words accurately, and Tara read 50% of the words and spelled 20% of the words accurately.

The intervention sessions and accompanying probes occurred daily for sixty minutes. The examiner first presented the students with a magnetic board that contained a rectangle which was divided equally into three boxes. There were also three small counters, which represent the letters that could be placed into the boxes. To model the task, the examiner would slowly pronounce a CVC word, and then place a counter into one of the boxes as each new sound was being enunciated. Then the examiner had the student slide the counters into the respective boxes as she (the instructor) pronounced the word. Next, the counters were replaced with magnetic letters which corresponded to the letters of the word in use. The same process was then used with the magnetic letters. The last element of the word box lesson required the student to use a

marker and actually write the letters of a word in the corresponding section of the rectangle as he or she pronounced the appropriate sound. This procedure was repeated for the remaining nine words in each lesson.

After completing the word box activity, the examiner moved on to the word sort activity, which used the exact same words. The examiner modeled the first lesson to show the proper procedures. For the rest of the word sort lessons, the examiner placed three key category words on the table in front of the student, and they all read the words together. Then, the instructor gave the student the stack of ten words and asked him or her to place the words into the correct category underneath the corresponding key word.

After each forty minute instructional session of word boxes and words sorts, the examiner gave the word identification and spelling probes, which typically lasted twenty minutes. None of the probes were identical to one another, but some words appeared on more than one probe. Each probe consisted of ten words, all of which contained CVC spelling patterns and were considered to be of equal difficulty.

The maintenance phase of the study began the day after the intervention ended, and consisted of probes which would indicate whether the effect of the treatment had continued after the intervention had ended. One word identification and one spelling probe were given for four straight days as the measure. The probes were randomly selected from the originally created probes, and were administered in the same way as those of the baseline and intervention.

The results of the study show that all three students increased in performance in word identification and spelling as compared to their baseline scores. In the maintenance phase, Karen's accuracy was 100% for all sessions, and she averaged 98% for word identification. Ron's average accuracy was 98% for both reading and spelling across all sessions, and Tara's

accuracy was 100% for all spelling sessions and averaged 95% for reading sessions. Joseph (2002) asserted that her results were consistent with previous studies that explored the effectiveness of word box and word sorts, and that this type of instruction is needed for struggling students who are not making important letter-sound associations.

This study sought to examine the effectiveness of combining word box and word sort instruction on word identification and spelling performance in children with mental retardation. In the following study, on the other hand, researchers utilize only word sort instruction to examine and compare its effects on spelling and word recognition performance with struggling students.

In 2005, researchers Joseph and Orlins conducted two case studies which examined the effects of words sorts on a second and third grade student who were experiencing problems with reading and spelling. The authors claimed that in most of the existing studies involving word sorts, it was spelling that was shown to improve after word sort instruction. In their study, Joseph and Orlins (2005) were interested in showing how word sorts can help struggling students with spelling *and* word recognition. This study involved two case studies, and this summary will describe the two studies separately.

The first case study involved a single second grade student who was experiencing problems with word recognition and reading according to her teacher. The examiner used word sorts as an intervention in order to increase her performance in this area of literacy. A multiple baseline design was used to measure the student's response to the treatment.

The independent variable in this study was the instruction that the examiner provided to the student, which consisted of word sorts.

The dependent variable consisted of scores that the student received on reading probes of three different sets of words containing ten words each. For the probes, the participant simply had to read the words correctly. Probes were administered during baseline conditions and after each word sort instructional session. Therefore, the dependent variable was the reading scores that the student received after getting the word sort instruction. The instruction and probes were implemented in a staggered-like fashion across the sets of words so that experimental control could be demonstrated.

The sample was a single, second grade student who was showing severe delays in reading compared to other students her age. According to her teacher, she had difficulty reading words that contained more than three letters. It was on the basis of her teacher's observations that the intervention for Sara was created, the purpose of which was to increase her word recognition skills.

To start the study, a 120 word screening test containing four letter words with various vowel and consonant patterns was given to Sara. She was asked to read the words, and the ones that she read incorrectly were placed on the three sets of word lists. Probes were given during baseline sessions, and they contained certain words from *all three* of the word sets. The words were printed on index cards, shuffled, and Sara was asked to read the words on the cards. After two sessions of baseline probes, the actual word sort intervention was given using only Set 1 of the word lists. Sets 2 and 3 would not yet be taught, but would still be tested during baseline conditions.

The word sort intervention (the instruction) took place in a one-on-one setting with the instructor. Sara was asked to independently sort the ten words from Set 1 into categories that were determined by the instructor. After sorting, Sara was asked to read the words aloud. She

was encouraged to self-correct when making a mistake in the sorting or while reading. Corrective feedback was given by the instructor if Sara was unable to self-correct.

After the instructional word sort session, a probe was given containing the words from Set 1 in which Sara was asked to read the words aloud. Once she reached mastery level criteria on Set 1 (90% of words read correctly on probes during two consecutive sessions), instructional word sorts for Set 1 ceased, and the next instructional session would use words from Set 2. The same was repeated for set 3. Once instruction ended, Sara was also given probes over time to assess her maintenance performance on reading words that she had mastered during instructional conditions.

The investigators' findings led them to conclude that Sara markedly improved her word recognition and retention of the words used during the word sort intervention. Sara reached mastery criterion levels on all sets of words during instructional conditions. This is in contrast to baseline conditions where she demonstrated relatively low performance levels fairly consistently. It was reasonable to assume, therefore, that her improvement in word recognition could be closely linked to the instruction that she received during the word sorts. The investigators also reported that her maintenance probe performance ranged from 90-100%.

The sample of the second case study in Joseph and Orlin's (2005) study was a single third grade student. He had been referred to special education by his teacher because he was struggling with spelling.

The independent variable for the study was the word sort instruction, and will be explained in more detail further on in this summary. The dependent variable was the scores that the student received on various spelling probes. The study used a multiple baseline design to examine the effectiveness of the word sort instruction.

To begin the study, John was given a 40 word spelling/screening test, and the words that he misspelled were placed into three sets of words each containing 10 words (set 1, 2 & 3). To record baseline conditions across the three sets of words, 10 item spelling probes were administered. For these, the word was given to John orally, and he was required to spell the word on a numbered sheet of paper.

Once baseline scores were established, for the first set of words, the word sort instruction (the treatment) began. The words were written on separate index cards. The instructor created the categories of words, and then asked John to sort those words according to the predetermined categories. He was encouraged to self-correct when mistakes were made, and when unable, the instructor gave corrective feedback. After each instructional session, he received a spelling probe identical to those given during baseline conditions. In order to achieve proficiency, John was required to get 90% correct on two consecutive probes, and when this level was reached, instruction using the word sorts ended. Maintenance probes were also given over a period of time to determine whether or not John retained the knowledge he had gained.

The findings of the study showed that the participant only made a gradual increase in the number of words spelled correctly for set 1during word sort condition when compared to the baseline condition for this set. For set 1, it took him six attempts to reach the 90% criterion level of performance. In contrast, he made an immediate increase in words spelled correctly on sets 2 and 3 when compared to baseline conditions for these sets. It only took him three trials of the word sort condition to reach the 90% criterion levels. The authors claim that these findings indicate that it was the implementation of the word sort instruction that allowed John to improve his spelling and to reach criterion levels for all three sets of words (Joseph & Orlins, 2005). The

participant was also able to maintain criterion levels of performance on maintenance probes for all sets of words.

In their study, Joseph and Orlins (2005) suggest that although word sort instruction has traditionally been used to help children with issues of spelling, this type of instruction also has the potential to make the important connection between spelling *and* reading. The study that follows examines the effect that word study has on students' application of spelling and phonological awareness in general.

Elliott and Rietschel (1999) conducted a seven month study to test the effectiveness of word study on students' spelling and phonics skills. They were searching for a nontraditional spelling program that would meet the wide range of skills found in a second grade classroom.

The independent variable in this study was small group instruction that was given to the participants**.** It consisted of typical word study activities such as word sorts, making words, and word hunts.

The study included two dependent variables with which the researchers measured the effects of their treatment. The first was an assessment named the Hearing and Recording Sounds in Words (Clay, 1993). With this test, the instructor reads a few sentences to the student, and then reads them again slowly, word-by-word while the student writes them down. The instructor then scores the test based on the student's phonemic analysis and the correct number of spellings.

The second dependent variable was the Qualitative Spelling Inventory (Bear & Templeton, 1996). The test was administered like a traditional spelling test where the instructor reads words aloud as the student attempts to spell them. The spellings were analyzed at the phonemic level, scored, and were used to find the participant's developmental level of spelling for the purpose of grouping. Within this system, there are six developmental levels of spelling,

and in ascending order, they are as follows: Preliterate/Prephonetic, Preliterate/Phonetic, Letter Name, Within Word, Syllable Juncture, and Derivational Constancy.

The sample for this study was 19 second-graders. Seven were ESL (English as a Second Language) students. Seven students were referred to as Strategies/LRE (Least Restrictive Environment), with two of these children also falling into the ESL category. Seven students were considered to be of the general population.

Once the initial assessments were given and scored, which was in the fall of 1998, the instructors divided the class into four separate groups according to their developmental stage of spelling. The small groups met two to three times a week for forty five minutes. Janet's two groups began the school year in the Preliterate and Early Letter Name stages, and Kim's groups started in the Letter Name and Within Word stages. As mentioned above, the instruction consisted primarily of word sorts, making words, and word hunts. After the study was completed in March of 1999, the instructors repeated the Recording Sounds in Words and Qualitative Spelling Inventory assessments to measure the effects of the instruction.

When looking at the results of the posttests, the investigators divided the data into three categories based on the student's demographics. The three respective categories were General Population, Strategies/LRE, and ESL. The first group contained students who were near or above grade level and were not receiving special education services. The second group consisted of students who had been referred for special education but were denied, were currently receiving special education services, or who were being monitored for possible referral in the future. The third group contained ESL students whose English proficiency ranged from P1 to P4 on a scale from one to five.

The investigators classified the results of the study into two different themes. The first theme was that all students progressed in their knowledge of words. The general population group made an average gain of four points on the Qualitative Spelling Inventory (QSI) and five points on the Hearing Sounds in Words assessment (HSW). The students in the Strategies/LRE group made gains of thirteen points on the QSI and four points on the HSW. The ESL group made the most significant gains in both of the assessments. There was a gain of twenty points on the QSI and seven points on the HSW. The investigators attributed the increase of the students' spelling abilities and the success of their intervention to the fact that the students were all working at their own developmental levels, and hence in their zone of proximal development, which research has shown to be vital when attempting to push students forward in their literacy skills.

The second theme was that all the students found the word study to be meaningful and enjoyable. All students were asked to evaluate the word study that they participated in. Some were asked to respond orally, and others gave written evaluations. The investigators reported that the children were able to articulate that they had indeed learned more about how words work, but that they were also able to tell explicitly what it was that they had learned.

Elliott and Rietschel's (1999) final comment in their study was that the word study instruction was only one part of a larger literacy framework that was used in the classroom, and that it was important for students to apply the knowledge that they had learned during word study to tasks such as those that occurred during the students' writer's workshop. They concluded that using word study as a classroom's spelling program does have the potential to be highly effective where there is a wide range of developmental levels. While Elliott and Rietschel (1999) used their study to determine the general "worth" of word study instruction as a nontraditional

spelling program, the researcher in the following study used controlled research to *compare* two contemporary phonics programs that employed word study, to a traditional phonics approach.

Joseph's (2000) exploratory study, sought to compare two contemporary phonics instructional approaches, word sorts and word boxes, to traditional phonics instruction through controlled research. In the study, traditional phonics instruction was simply described as rule-based and involving many worksheet assignments. This was contrasted with word study procedures like word sorts and word boxes, which involve multi-sensory manipulatives to help children internalize phonological and orthographic features about words. There were two specific questions that were explored in this study: 1) Will first-grade children who receive word boxes or word sort instruction outperform first-grade children who receive traditional phonics instruction on measures of phonemic awareness, word identification, and spelling? 2) Will word box and word sort instruction produce differential effects on first-grade children's phonemic awareness, word identification, and spelling performance?

The independent variables of this study were the three conditions of instruction: word box instruction, word sort instruction, and a control group which received a traditional method of phonics instruction.

The four dependent variables of this study were posttests that were administered individually to the participants at the conclusion of the study. The posttests consisted of phonemic awareness, word identification, pseudoword naming, and spelling measures, all of which will now be described respectively.

The first dependent variable was used to measure phonemic awareness. The instructor used the Phonological Awareness Test (Robertson & Salter, 1997), which is a norm-referenced measure, and which allowed the instructor to derive standard scores from two subtests: Phonemic

Segmentation and Phonemic Blending. For the segmentation task, students were asked to verbally segment each sound in words that were spoken by the examiner. For the blending task, the instructor said each sound of a given word separately, and the student was asked to blend all the sounds together, and say the word as in normal speech.

The second dependent variable was used to measure word identification skills. Sixty words containing the CVC pattern were written randomly onto two sheets of paper, and the students had to read the words listed on the paper. The total number correct was recorded for each student.

The third dependent variable measured the students' ability to read lists of nonsense words. The Woodcock-Johnson Achievement Battery-Revised (Woodcock & Johnson, 1989), which is norm-referenced, was used to derive standard scores for this task.

The fourth and final dependent variable measured students' spelling ability. Twenty words were randomly selected from each of the CVC patterns that were taught during the instruction in all three conditions. The instructor said the word, and the students were asked to spell the word on a plain piece of paper. The total number correct was recorded for each student.

The sample for this study consisted of 42 participants from two first grade classrooms. In total, there were 19 females and 23 males, all who were Caucasian and from low to lower-middle socioeconomic levels. A teacher educator, who had a specialization in literacy and was trained in both approaches, implemented the word box and word sort lessons.

For implementation, the instructor randomly selected 42 students from two first grade classes and placed them into the two experimental conditions with each group containing 14 students. The instructor then administered the Letter-Word-Identification subtest of the Woodcock-Johnson Achievement Battery-Revised to obtain initial performance levels on word

recognition. The initial test showed no significant differences between the three groups on Letter-Word Identification performance.

The two experimental groups went through separate conditions in 50 daily sessions over a 12 week period beginning in September and ending in the following December. All students in the experimental conditions (the word box and word sort groups) were removed from their classrooms during phonics instruction time, but participated in contextual reading time in their own classrooms. In all three conditions, students were taught various CVC phonogram patterns. Approximately 6-10 words were taught per day, and a new word family was presented approximately every week. The procedures for the three conditions will now be described one at a time and in further detail.

The experimental group that was instructed in word boxes met daily for a 20 minute session. A magnetic board with drawn rectangles divided into three sections was presented to the students. The three sections of the rectangle corresponded to the sounds of the CVC patterned words that were presented. Each session was presented in three stages. In the first, the instructor would slowly pronounce a CVC word, and the students had to place plastic chips right below the divided sections of the rectangular box. Then the students were asked to slowly pronounce the sounds of the word while simultaneously placing the chip into its respective section of the rectangle. In the second stage, the chips were replaced with magnetic letters, and the students had to place the letters in their appropriate sections while slowly pronouncing the word. In the third and final stage, the magnetic letters were withdrawn, and the students were asked to write the letters with an erasable marker in their respective sections while again articulating the sounds of the word. After this, the student would wipe the board clean and the whole process would start again with a different word.

The experimental group being instructed in word sorts also met daily for 20 minute sessions. The instructor would start by placing three index cards on a table each containing a different guide word representing a different category of the CVC pattern. The instructor and students would chorally read each separate word to firmly establish the three different categories. The instructor then placed several plastic chips on the table. The instructor said a word, and the students had to place a chip underneath the correct category or guide words. Then the instructor gave the students another index card with the word that had just been spoken, and the students were asked to replace the chip with the actual word. The lesson would continue on like this until there were no more words to be categorized. At this time, all the words, excluding the guide words, were shuffled and put into a stack. The students then independently sorted all the words in the pile according to their category, and when completed, were asked to read the words below each category. The third and final step required the students to spell all the words that they had just sorted. They were given a piece of paper with nothing but the three initial guide words written at the top in three separate columns. The instructor would say a word, and the students were asked to write the word under the correct category.

The students in the control group received instruction that was considered traditional, and which took place in their classrooms with their first-grade teachers. Every day, the teachers wrote a list of words containing a similar spelling pattern on an overhead, and the class would read the words together chorally. The words were then printed on long rolls of paper, which were hung on the wall so that they could be seen by all students throughout the day. As new spelling patterns were taught, new rolls of paper containing appropriate spelling words were hung next to the existing lists. Workbook exercises were sometimes given to the students, which involved writing the words, cutting and pasting tasks, and drawing circles around words.

The results of this study indicated that the type of instruction had different effects on the three different groups. As was mentioned earlier, the four areas that were measured in the posttests were phonemic awareness (separated into phonemic segmentation and phonemic blending), word identification, pseudoword naming and spelling. Compared to the control group, the word box instructional group did significantly better on measures of phonemic blending, phonemic segmentation, pseudoword naming and word identification. By comparison, the word sort instructional group did significantly better than the control group on measures of phonemic segmentation, word identification and spelling. There were no significant differences shown between the word box instructional group and the word sort instructional group on any of the posttest measures. The only measure that came close to differing significantly between these two groups was in spelling with the word sort group being favored.

Joseph's (2000) study concludes with a general discussion in which she asserts that word box and word sort instruction have definite merit in regards to their use for improving literacy skills among first grade students. While word sort instruction had traditionally been considered a spelling-based phonic approach, studies have shown, including the present study, that word sorts can also help students develop word recognition skills (Joseph, 2000). Joseph (2000) also reported, anecdotally, that the participants in the word sort group showed more frequent self-correcting and self-monitoring behaviors than the other two conditions. Finally, the students in the two experimental conditions found the activities to be more engaging and enjoyable than the control group, which received instruction that was more traditional in its approach to phonics. The study that follows is similar in nature to this, and other previously reviewed studies in that the goal of the researcher was to determine if word study instruction would constitute a better

spelling program than the traditional basal approach that had been in use previously in a mixed grade classroom.

Brandt and Giebelhaus (2000) developed a quasi-experimental study to measure the effectiveness of word study instruction on spelling achievement in Brandt's Developmentally Handicapped, mixed-grade classroom

The independent variable for this study was the word study instruction that was given to the students during the study.

The dependent variable measured the success of the independent variable through a test called the Developmental Spelling Analysis (Ganske, 1999). A t-test design using matched pairs was used to measure the before and after effects of the independent variable. The Developmental Spelling Analysis (DSA) included what was called a Feature Inventory, which demonstrated students' knowledge of specific orthographic features, as well as their ability to spell entire words. Two points were given if the word was spelled correctly, one point was awarded if a given feature was spelled correctly, and zero points if that particular feature was misspelled.

The sample for the study was one of convenience, and consisted of all the students in Brandt's classroom. It was a developmentally handicapped classroom containing students in grades first to third with a total of thirteen students. However, the matched pair sample of the study consisted of only twelve of these students. There were three boys from the third grade, two girls and four boys from the second grade, and one girl and two boys from the first grade. The school was located in urban Ohio and generally served students from a low socioeconomic background.

The researcher started the six week study by administering the DSA to all twelve of the student participants. After the administration and scoring of the tests, which was during the first week, students were put into homogenous groups according to their appropriate stage of spelling development.

During weeks two through five, the students were instructed in various word study activities in their small groups, and the nature of the activity depended on the day of the week. Each week, 10-15 new words were given to the groups to use in these activities. On Mondays, the students completed word sorts. On Tuesdays, writing sorts were administered, and were considered a follow-up activity to the word sorts. On Wednesdays, the students simply had to put their weekly words into alphabetic order. Thursdays were called word maker days. The students were asked to make words by selecting corresponding rimes and onsets. On Fridays, the teacher had the students play various word games, and then gave the groups spelling tests. No other information about the nature of the games or the procedures for the spelling test was given in the study.

During week six, the researcher gave the DSA again to all the individuals in the sample, and completed the scoring. Those scores were then matched to the students' initial scores to measure the difference of achievement after the instruction in word study activities.

The results of the study showed that there was a significant difference between the pre and posttest scores on the DSA, and it was concluded that, overall, the treatment was effective in increasing scores on measures of spelling. Eight of the thirteen participants, or 61.5% of the sample, showed a rise in their DSA scores after the treatment. Five participants, or 38.5% of the sample, stayed consistent in their scores on the pre and posttests. The mean score for the pretest was 3.92, and after treatment, it rose to 8.31.

The researcher stated that the increase in her students' performance was notable given that the actual treatment only lasted four weeks. She credited her students' overall success to the fact that they were able to work at their own developmentally appropriate levels, and that the students had opportunities to discover patterns in words through manipulative activities. Additionally, the students were reported to have thoroughly enjoyed the activities, and were very enthusiastic about learning to spell. The researcher also reported that her students engaged in more reciprocal teaching throughout the study than she had ever previously seen. Brandt and Giebelhaus' (2000) study was designed to measure the effectiveness of word study instruction on spelling achievement in a Developmentally Handicapped classroom. The next study involves two researchers who compared the effects of a word study-based phonics program between students with mental retardation and students without disabilities, but who were still struggling.

In their study, researchers Joseph and McCachran (2003) examined the effectiveness of word sorts on phonological awareness, word recognition, and spelling acquisition between children with mental retardation (MR) and non-disabled children who were considered "at risk" of reading failure. More specifically, the study sought to determine if students with MR could benefit from contemporary phonic instructions like word sorts, and to determine if they could perform at basic literacy performance levels comparable to students without disabilities.

The independent variable for this study was the instruction that the students received during a two month period. The instruction included word sorts and was conducted daily for twenty minutes.

There were four dependent variables in the study that were used to measure the success of the independent variable. The first was derived from The Woodcock-Johnson Psycho-Educational Battery (WJ-III; Woodcock, McGrew, & Mather, 2000). Two portions were used

from this test, the Letter-Word Identification and Word Attack subtests. The subtests measured reading words in isolation and reading nonsense words in isolation. Scores were based on a mean of 100 and a standard variation of 15.

The second dependent variable was a traditional style spelling test. The experimenter said a word, and the students were asked to spell the words on a blank piece of paper. The spelling test contained ten CVC-patterned words that were chosen randomly from a list of words that were taught during the instructional sessions. A raw score was derived from this measure.

The third dependent variable was used to measure the students' transfer spelling abilities. This assessment was conducted in the same way as the spelling test described above, the difference being that the ten words were *similar*, but not identical, to the words that were taught during the instructional sessions. The words contained either the CVC or CVCC spelling pattern. A raw score was also derived from this measure.

The fourth and final dependent variable in this study was based on The Comprehensive Test of Phonological Processing (Wagner, Torgesen, & Raschotte, 1999), and measured the students' phonological awareness skills. Inside of this larger test, there were three subtests that were used in the study. One was the phoneme elision subtest, which measured the students' ability to say a word when a sound had been removed from a word presented orally. The other two subtests involved the blending and segmentation of phonemes. Scores were based on a mean of 100 and a standard variation of 15.

The sample for the study included 16 students. Eight students were with MR. Of these, six were male, and two were females. Four were in the first grade, and the other four were in the third grade. The remaining eight participants were considered to be "at risk" of reading failure

based on their low scores on a standardized reading achievement test. Of these, six were in first grade, and two were in second grade.

The length of the study was a two-month period in which the two groups received word sort instruction daily for 20 minutes. The two groups were mixed, so that each group contained students with MR and students who were considered "at risk" of reading failure. Seventy words were chosen for the word sort instruction including words with the CVC and CVCC consonant-vowel patterns. Just as in the other studies on word sorts, the students were asked to sort index cards containing printed words according to their respective categories, which were indicated by guide words (also written on index cards). The instructor initially modeled the procedures for the sorting tasks, and then asked the students to complete the sorts independently. After completing the sorts, the instructor asked the students to read the words aloud, and encouraged them to make self-corrections by comparing the sorted words and the guide words, which contained the categories that were being practiced. At the end of all of the instructional sessions, all the students in the study were given the posttest measures.

The results of the study showed that both groups made overall gains in performance from pretests to posttests. Three students with MR and three children considered "at risk" made substantial gains on letter –word identification. Four students with MR and five of the "at risk" students made adequate gains on pseudoword naming. Two students with MR made large gains on their overall phonological awareness composite scores, and several students considered "at risk" made adequate gains on these same scores. Both groups made gains on the spelling measure with some students with MR making higher gains from pretests to posttests than children identified as "at risk." There was no significant difference *between* the two groups on

phonological awareness, word recognition, and spelling posttest measures while controlling for differences in performance on pretest measures.

In the discussion section of the study, it was noted that both groups of students performed below national norms on the pretest measure of overall phonological awareness, which is an important skill for predicting performance on word recognition tasks. The results of the study also showed that there was variability in literacy performance within both groups of students. Some of the children with MR and some of the students considered "at risk" of reading failure made gains in performance when phonics instruction was delivered to the students. This answered, in the affirmative, one of the researchers' initial questions, which was whether or not students with MR could benefit from contemporary forms of literacy instruction like word sorts.

Based on the results, the authors recommended that students with mild to moderate MR should be instructed in word study lessons and other word recognition approaches instead of simply lessons that focus exclusively on functional reading skills. For the students who did not appear to benefit from the analogy-based strategies when attempting to identify and spell unknown words, Joseph & McCachran (2003) suggested that such students "may need a phonics approach that emphasizes explicit instruction in making one-to-one letter sound correspondences with words as well as explicit instruction on phonemic awareness" (p.197). In this study, Joseph and McCachran (2003) used word sort instruction to examine its effects on students' phonological awareness, word recognition, and spelling development. Similarly, the following study was designed to find out if extended word study spelling instruction could improve students overall orthographic development, particularly when compared to traditional spelling instruction.

In 2001, Abott conducted a study with the general purpose of examining the effects that different instructional environments have on student's orthographic development. Two classrooms were compared, one where a traditional approach to spelling was implemented, and one whose spelling instruction consisted of word study. According to the author, her study was unique in that one of the control groups engaged in an extended word study curriculum in which the instructors used a "most common usage" strategy. This strategy had average third-grade students, who typified the within-word developmental stage, study the reliable phonics generalizations that corresponded to their developmental level of spelling (Abbott, 2001). The study addressed two specific questions:

1. Does spelling instruction based on extended word study produce significantly better scores on pre and posttest measures compared to traditional spelling instruction with typical third-grade students spelling at the within-word developmental stage?
2. Does spelling instruction based on extended word study produce significantly better scores for transfer of orthographic knowledge with high- and low-frequency untaught words compared to traditional spelling instruction with these students?

For this study, the two different classes or instructional groups (traditional versus extended word study) were treated as one independent variable. The dependent variable was the posttest difference of scores on a spelling assessment called the Qualitative Spelling Inventory (Bear, Invernizzi, Templeton, and Johnston, 1996). The Qualitative Spelling Inventory (QRI) was first given as pretest in order to select eight students from each class who fell into the within-word developmental level. The same test was also given at the end of the study in order to obtain a quantitative measure of orthographic growth on transfer words from the August

pretest to the April posttest. Transfer words were words that matched the studied orthographic *patterns* but which had not appeared on previous assessments.

The sample for this study consisted of third grade students from a Kansas elementary school that served a low to middle-income Caucasian neighborhood. The sample size was eight students from the different classes that were being compared. All sixteen participants were in the within-word level of spelling development. Some typical concepts in this level, among others, include long vowel spellings and two-syllable words with short vowels.

The year-long study was divided into three phases (phase I, August to October; phase II, November to January; phase III, February to April). Class A engaged in traditional spelling instruction, which was based on the use of basal-suggested weekly spelling lists. Class B, on the other hand, engaged in extended word-study instruction, which focused on the orthographic components of words. "To separate the effects of these instructional procedures from the effects of word frequency on the transfer of orthographic knowledge, students were evaluated under both high-and low-frequency spelling word conditions (high-frequency, phase I; low-frequency, phases II and III)" (Abbott, 2001, pg. 3). The investigators changed from high to low-frequency words in order to measure the effect of word frequency on the students' abilities to transfer orthographic knowledge. To do this, there was an instructional change in phase III for class A (the traditional class). The change included the introduction of minilessons about orthographic regularities with no follow-up or review instruction.

The classroom procedures for Class A revolved around daily spelling lessons that averaged 45 minutes in length. The various lessons were fairly unsophisticated and were typical of activities that one would find in traditional spelling instruction. Throughout the week, the teacher for class A did not teach or discuss the common word patters found in the list of words.

However, for the first six Tuesdays in phase III, a 45-minute researcher-taught lesson replaced the usual Tuesday activity in class A. For these lessons, the researcher taught the students the most common long vowel usage patterns. The students then took each word from their weekly spelling list (provided by the researcher for those 6 weeks only) and wrote them in the appropriate pattern column on a large sheet of computer paper. At the end of the special sessions, the class and researcher discussed the results of the categorizations as they related to the most common usage patterns.

The procedures for class B used a spelling program in which the focus of the instruction was on the phonetic and orthographical similarities of words. It was an extended word-study approach, and had a strong focus on spelling generalizations and the most common usage of spelling patterns.

For 45 minutes a day, teacher B rotated three spelling groups through three separate activities: seatwork, computer work, and teacher-led small-group instruction. When the students from class B were in the teacher-led small groups, the activities followed a general sequence, but the time frame for the activities was not rigid as it was paced according to students' progress. Each cycle of activities lasted from two to four weeks. The group would first brainstorm a set of words based on a sound that the teacher provided. The generated list usually ranged from 50 to 70 words. The resulting words would then be categorized and grouped together based on common spellings. Next, the teacher led the students in activities that involved working with the sounds' different spelling structures, not the spellings of specific words or words from a list. The teacher and students would discuss patterns and take note of common word families or rimes. The teacher in class B emphasized that the best strategy for guessing the spelling of an unknown word was to use the most common spelling pattern. Over a number of days in which the students

worked on activities to reinforce discoveries of most common usage patterns, the teacher gave non-graded, formative quizzes to determine progress. When students had mastered common spellings associated with the sound, the process would start again with a different sound.

As was noted earlier, the QRI (Bear et al., 2008) was used to obtain data on the orthographic growth of the two classes. In addition to the pre and posttest, the QRI and its Orthographic Spelling Guide component was used to measure orthographic growth on transfer words, which was assessed using biweekly transfer word spelling tests. Twice a month, both classes gave a transfer word spelling test of four words using the Orthographic Spelling Guide. The first four transfer tests, which occurred in phase I, only included high-frequency words. The last eight tests, which occurred in phases II and III, included only low-frequency words.

The results of the study showed that there was no significant difference between the traditional and extended word-study groups' pretest scores. However, there *was* a significant difference between the two groups' scores on the posttest. It was concluded that the group receiving extended word-study instruction "better advanced students' overall orthographic development than did traditional spelling instruction" (Abbott, 2001, pg. 7).

When analyzing the effects of high and low-frequency words on transfer of orthographic knowledge, it was found that, in phase I (high frequency words), there was "no significant interaction or main-effect between-group differences" (Abbott, 2001, pg. 7). However, in phase II, which involved low-frequency words, there was a significant, moderately strong main effect between-group difference. The extended word-study group performed better than the traditional spelling group in transferring its spelling knowledge to low-frequency words with similar orthographic structures. There were no significant results found for transfer words in phase III.

This study indicates that teachers of spelling should consider incorporating extended word-study into their curriculum, including lessons on most common patterns, when trying to improve their students' orthographic knowledge. This knowledge could help students make better guesses when spelling or reading words which are unfamiliar to them.

Conclusion

This chapter began with a presentation of certain theoretical perspectives on literacy acquisition and instruction in general. The studies, which were then reviewed, all contained interventions that were based on word study, particularly word sorting. It was important that the instruction for the present case study was backed by research and based on best practices. The theory and research outlined in this chapter constituted the foundation of the intervention plan that was developed for the participant in this case study. The following chapter will describe the procedures that were followed for the intervention that was used in this case study.

Chapter Three: Procedures

Description of Participant

The participant for this case study, was a nine year old, third grade Hispanic girl named JR (pseudonym). She attended a bilingual elementary school, and received instruction in English and Spanish from her primary teacher on an alternating biweekly basis. JR's native language was Spanish, and her parents spoke no English. The participant had needs in all areas of literacy including phonological awareness, decoding, sight-word recognition and above all, spelling. Although the participant was in the third grade, she was exhibiting literacy skills (in English *and* Spanish) that were typical of a student in the later part of K5. In November of 2010, JR qualified for special education and met the criteria for a Specific Learning Disability and Speech and Language Impairment. Her IEP indicated that she would receive specialized academic instruction in the areas of reading, writing and math as well as specialized instruction in speech and language.

Explanations of Pre-testing Data Collection

This case study used a pretest-posttest design. The Primary Spelling Inventory (Bear, Invernizzi, Templeton, and Johnson, 2008) was used to gather the data for the pre and posttest (See Appendices C and D). The results from the pre and posttest, which constituted the dependent variable for the study, were compared to measure the effectiveness of the treatment. The instructional word and picture sort sessions was the treatment, and, therefore, the independent variable in the study.

The Primary Spelling Inventory (PSI) is a 26 item spelling assessment. It is generally used with students in kindergarten through third grade, and students take it just as they would a traditional spelling test. The PSI "consists of lists of words specifically chosen to represent a

variety of spelling features or patterns at increasing levels of difficulty" (Bear et al., 2008, p. 28). All the words are designed to as assess students' knowledge of spelling features that relate to the different stages of spelling. The first stage of spelling is the Emergent stage where students scribble or make letter-like forms but do not associate their markings with a particular phoneme. The second spelling stage is Letter Name – Alphabetic in which students learn to associate letters with phonemes. They are learning consonant sounds, letter sounds, and consonant blend and digraph sounds. The third stage of spelling is the Within Word Pattern stage. In this stage students are learning long vowel patterns, r-controlled vowels, more complex consonant patterns, and diphthongs. The fourth spelling stage called Syllables and Affixes, students are learning rules for adding inflectional endings, syllabication, and homophones. In the fifth stage of spelling, Derivational Relation, students explore consonant alternations, vowel alternations, Latin affixes and root words, Greek affixes and root words, and etymologies (Bear et al., 2008). The guidelines for administration of the PSI are not rigid in that it is not absolutely necessary for the student to attempt all 26 items. It is recommended, however, that the administrator call out enough words so that there are at least five or six misspelled words to analyze in order to define a specific developmental stage of spelling. After administration, the spelling attempts are scored using a feature guide. The scores help to identify students' spelling stages and to plan and guide instruction. "The PSI has been used widely along with the accompanying feature guide and is a reliable scale of developmental word knowledge. The internal consistency is highly reliable as demonstrated by alpha coefficients over .90" (Bear et al., 2008, p.30).

The participant was pretested with the PSI the week prior to the beginning of the intervention. For administration, the researcher called out a word, used it in a sentence, and then asked the participant to spell the given word. The researcher called out 15 words for JR to spell.

After completing the PSI pretest with JR, the researcher scored and analyzed the mistakes that were made. Each of the words on the PSI has a number of orthographic features that are scored separately. Thus, points can be awarded for the correct spelling of an entire word, or for specific features of the word that are spelled correctly. The word and picture sorts and orthographic features that were studied in the intervention were determined by the results of the PSI pretest. Results for the participant's scores on the PSI pre and posttest can be found in chapter four.

Description of Procedures

The interventional sessions for this case study took place in a third grade bilingual classroom. There were a total of 18 instructional sessions, with each session lasting 30 minutes. In JR's classroom, reading instruction took place in a 90 minute block, which was made up of three sections: 20 minutes of whole group instruction, 60 minutes of differentiated, small group instruction, and finally, 10 minutes of another whole group wrap-up. The intervention with JR took place during the small group portion of the reading block. There were no other students in the class whose literacy skills were quite as low as JR's. This was one reason why the researcher had JR as the only participant for this case study. However, after the fifth session, the researcher decided to include two other third grade students in the instructional sessions. The two students' literacy skills were only slightly above those of JR. For the initial five sessions, JR was fairly resistant and uncooperative. She engaged in behaviors similar to the ones described in chapter one of this study under the strengths and needs section. After including the other students in the sessions, however, JR was much more cooperative and willing to work. Data for this study were only collected for JR.

The instructional word and picture sort sessions, or the treatment, served as the independent variable in the study. These 30 minute sessions took place at a small table just

outside her classroom. The words and pictures for each word sort were printed on miniature index cards, and were kept in small plastic sandwich bags. Every sort contained three categories of sound/spelling, and there were always three key words that exemplified the three categories. The initial sorts that were completed by JR only contained pictures, except for the key word cards, which always contained a picture *and* its corresponding key word. JR knew the names of all the images in Spanish, but since her English language was limited, she didn't know the names of many, or most of the pictures in English. The first step was to take out all of the cards and spread them out on the table. The researcher told JR the names of the images one-by-one and asked her to repeat them back. Once she knew the vocabulary of the pictures, the three categorical key words were examined. The researcher made sure that JR knew the names of the letters for each category, as well as how to pronounce their corresponding sounds. The three key words were then placed on the table next to each other in three separate columns. It was then up to JR to sort all of the cards into their respective categories. When picking up a card for placement, she was required to first say a key word, and then say the name of the image on the card to see if it matched before placement. If it did, she placed the card in that category. All the procedures were modeled by the researcher for JR several times (using different sorts) before she did them independently. When sorting, the only help the researcher provided was a reminder of what the images on the card were called in English.

After completing the sort, the researcher checked for mistakes. If there were mistakes, the researcher indicated that a certain column, or category had a mistake, and that she should try to find it on her own. To do this, she would first say the key word, and then say the name of the images on the cards in the columns to see if they matched. Sometimes she would find the mistake(s) and correct it on her own. Other times the research had to help by pronouncing all the

key words and the sorted cards in a very slow and deliberate manner. With this help, she was typically able to find the mistakes. For each session, JR sorted the words at least three times. To make it more interesting and fun for JR, the researcher timed her the second and third times to see if she could sort the words faster than her previous attempts.

Immediately after the sorting, the second part of the session began, which consisted of spelling the words from the sort. The purpose of this activity was twofold. Most importantly, the researcher wanted JR to make the mental connection between the image, sound, and spelling of the words in the sorts. Secondly, JR's invented spellings allowed the researcher to make observations about her knowledge of English orthography. Student's invented spellings can serve as a guide for teachers when designing differentiated, efficient, and effective instruction (Bear, Invernizzi, Templeton, and Johnston, 2008). Aside from the intervention in the present case study, the researcher was also JR's teacher for other subjects, so knowledge of her skills was of obvious value. The spelling took place on small, personal white boards with dry erase markers. The researcher had JR divide her whiteboard into three columns, and then write the categories at the top of each column. The researcher always indicated which categories would be called out so that she would spell those particular letters correctly. The researcher called out a word, put the card (picture) on the table, and then JR attempted to spell the words. The only spelling mistakes that the researcher made sure to correct *every time* were the mistakes related to the categories that were being studied in that particular session. At times, other corrections were offered by the researcher, if the situation warranted, but there was no protocol for when these corrections would be offered. JR was very cognizant and self-conscious of her spelling difficulties, so the recognition of every single spelling mistake could have been counterproductive. Each of the eighteen sessions, which lasted 30 minutes, followed the same

format throughout the entire intervention. The only things to change from session to session were the spelling categories that were being examined. There were a few sorts that JR struggled with more than others, so some sorts were done more than once. Table 1 lists the sort categories that were studied in chronological order.

Table 1

Word Sort Activities

Session	Word Sort
1	Picture Sort: Beginning Blends gr-, tr-, dr-
2	Picture Sort: Beginning Digraphs sh-, ch-, th-
3	Repeat of Session #2
4	Picture Sort: CVC Pattern i/o/u
5	Repeat of Session #4
6	Word & Picture Sort: CVC Pattern: e/o/a
7	Repeat of Session # 6
8	Picture Sort: Beginning Blends gl-, bl-, cl-
9	Picture Sort: CVC Pattern: i/o/u
10	Word & Picture Sort: Beginning Blends and Digraphs l-, r-, s-
11	Picture Sort: CVC Pattern: e/o/u
12	Picture Sort: Beginning Blends gl-, bl-, cl-
13	Word & Picture Sort: Long vs Short -o (CVCe)
14	Picture Sort: Beginning Consonants & Digraph h-, ch-, sh-
15	Word & Picture Sort: Long/Short Vowels -i (CVCe)
16	Repeat of Session # 6
17	Word & Picture Sort: Ending Digraphs sh-, ch-, th-
18	Word & Picture Sort: Ending Digraphs and Blends -ing, -amp, -ink

Explanation of Post-testing Data Collection

As was noted earlier, the participant was pretested with the Primary Spelling Inventory (PSI; Bear et al., 2008) the week prior to the beginning of the intervention. After the 18

instructional sessions were completed, the PSI was given again as the posttest. The administration and scoring of the posttest was done in the exact same manner as the pretest. A feature guide is used to score the spelling inventory (See Appendices C and D). With the PSI, one does not simply mark the spelling words right or wrong. Rather, each word has a certain number of orthographic features that are scored separately from each other. The scoring of the PSI is more like an analysis in that it, "provides *qualitative* information regarding what students know about specific spelling features and what they are ready to study next" (Bear et al., 2008, p. 33). To determine a stage of development, the administrator notes where the student makes two or more errors under the stages listed in a shaded box at the top of the feature guide. Results for the participant's scores on the PSI pre and posttest can be found in chapter four.

Conclusion

The intervention in this case study was based on the use of word and picture sorts to develop and improve the spelling abilities of the participant. The necessity and direction of the intervention were determined primarily on the basis of the results of the PSI pretest. Following the completion of the instructional sessions, a comparison of the PSI pre and posttests was used to measure the effectiveness of the intervention. The results of the four week intervention and its effectiveness are presented in the following chapter.

Chapter Four: Results

The purpose of this study was to determine if the instructional use of word and picture sorts could help a struggling student improve her spelling abilities. Data were collected from pre and posttests of the Primary Spelling Inventory (Bear et al., 2008) assessment tool. Copies of the completed pre and posttests can be found in Appendices C and D. This chapter presents the information that resulted from the word and picture sort intervention that was implemented.

Presentation and Analysis of Pre and Posttest Data

Three separate scores can be derived from the Primary Spelling Inventory (PSI) by completing the test's accompanying feature guide (See Appendices C and D). The first score is the number of words that are spelled correctly. The second is the number of feature points that are spelled correctly. Each of the words on the PSI has a number of orthographic features that are scored separately so that an analysis can provide information about students' knowledge about specific spelling features. The third score that can be derived from the PSI is a total score, which is the total number of feature points plus the total number of words that are spelled correctly. In addition to the three scores previously mentioned, instructors are also able to identify a student's developmental level of spelling. This knowledge is valuable because it allows instructors to differentiate lessons and teach within a student's zone of proximal development. In this subsection, a brief comparison of the pre and posttest scores in the three primary areas will first be presented. Then, a more detailed comparison and analysis of the pre and posttest feature points will be presented.

On the pretest, JR spelled 2 of 15, or 13% of the words correctly. On the posttest, she spelled 5 of 15, or 33% of the words correctly. This shows a gain of 20% in the number of words spelled correctly from the pre to the posttest. Figure 1 below shows JR's pre to posttest

results as measured by the percent of words spelled correctly on the Primary Spelling Inventory (PSI).

Figure 1 - Words Spelled Correctly on the Primary Spelling Inventory

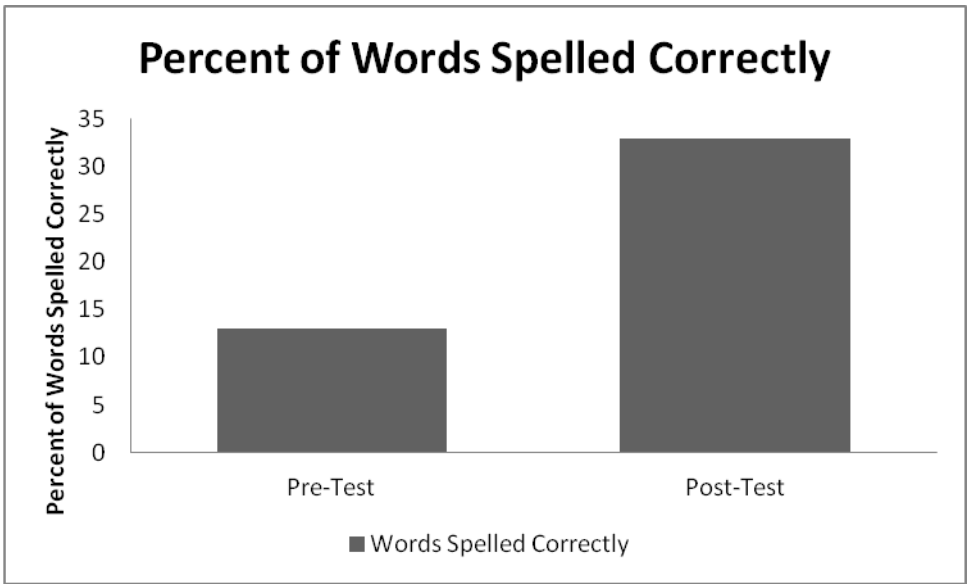


Figure 2 below shows that on the Primary Spelling Inventory (PSI) pretest, JR spelled 14 feature points out of 38 correctly, or 36%. On the PSI posttest, she spelled 25 feature points out of 38 correctly, or 65%. This shows a gain of 29% in her spelling of individual word features from the pre to posttest.

Figure 2 - Feature Points on the Primary Spelling Inventory

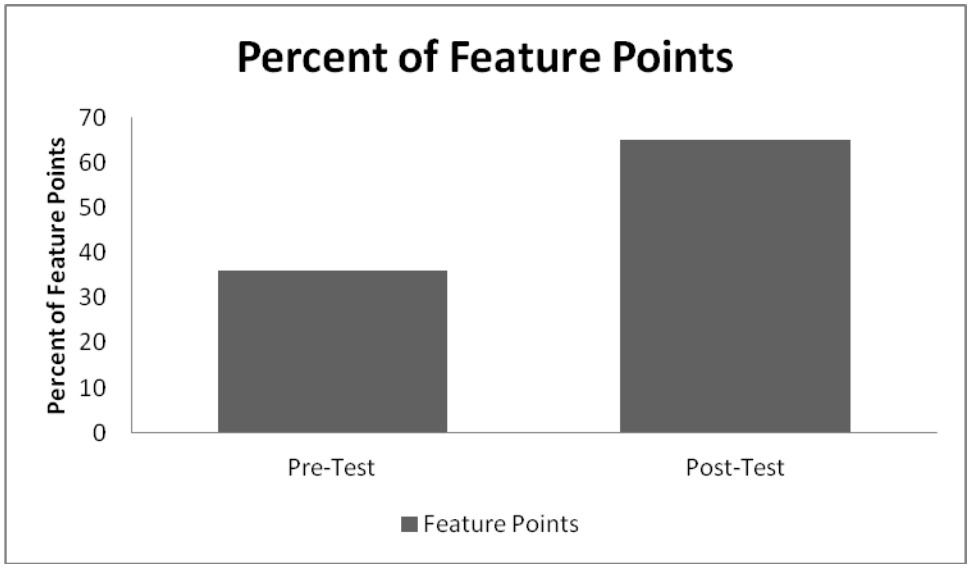


Figure 3 below displays JR's total score on the spelling pretest on the Primary Spelling Inventory (PSI) which was 16 out of 53, or 30%. On the PSI posttest, her total score was 30 out of 53, or 56%. This shows a gain of 26% in her total score on the PSI from the pretest to the posttest.

Figure 3- Total Score on the Primary Spelling Inventory

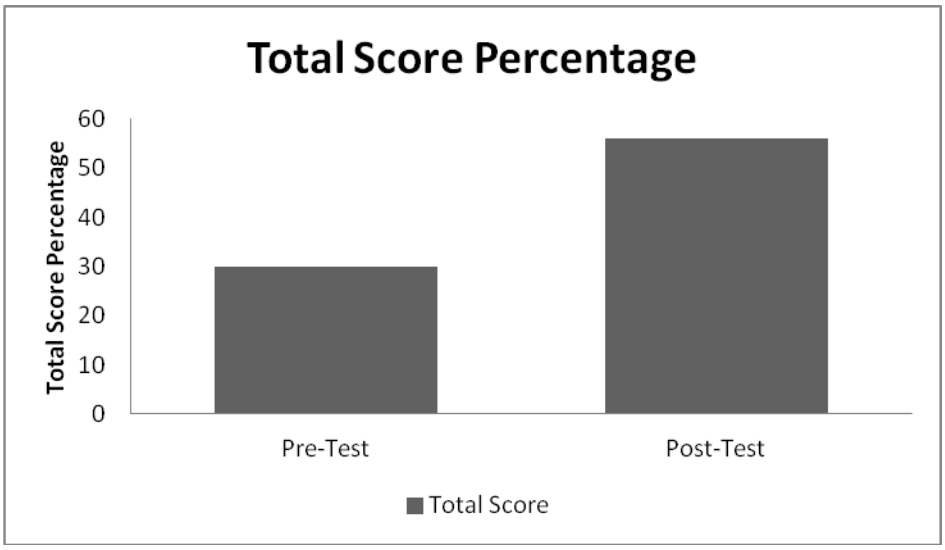
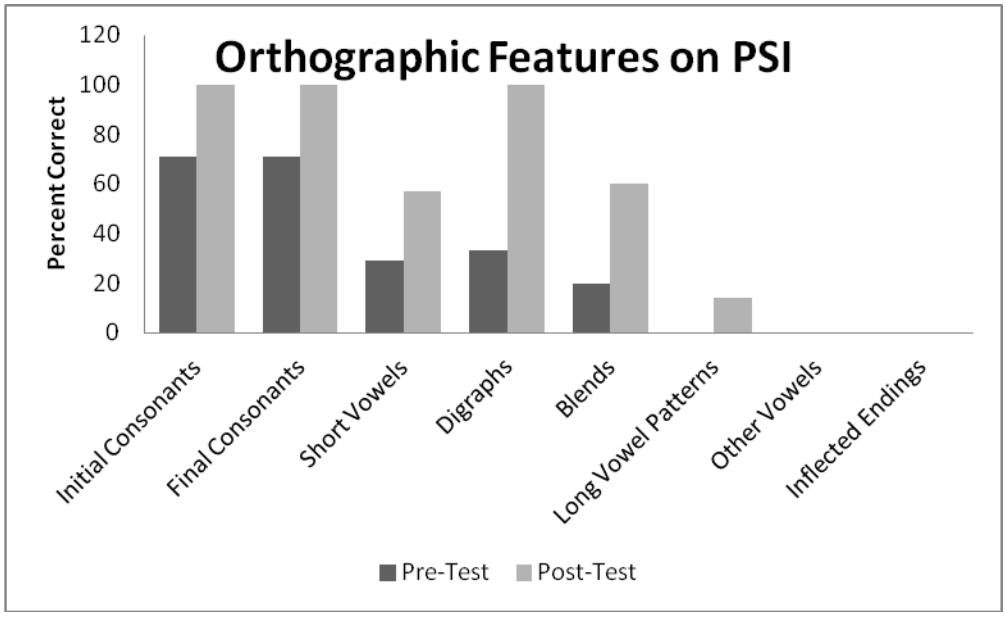


Figure 4- Orthographic Spelling Features Represented on the Primary Spelling Inventory



An analysis of a student's spelling mistakes, or lack thereof, in words can be most revealing when considering a student's developmental level in spelling. Figure 4 above displays JR's pre and posttest results on the orthographic features on the Primary Spelling Inventory (PSI). The following paragraphs will detail JRs pre and posttest scores for the eight specific orthographic features that are represented on the PSI.

The first category of orthographic features that appears on the PSI is initial consonants. On the pretest, JR scored received 5 out of 7, or a 71% on initial consonants. For the word *hope*, she used an initial –g instead of an initial –h. For the word *wait*, she used an initial –u instead on an initial –w. On the posttest initial consonant feature, JR scored all, or 100% of the initial consonants correctly.

The second category of orthographic features on the PSI is final consonants. For this feature, JR also received 5 out of 7, or 71% on the pretest. For the word *dig*, she used a final –t

instead of –g. For the word *rob*, she used a final –t instead of –b. On the posttest, JR scored all, or 100% of the final consonants correctly.

The third orthographic feature on the PSI is short vowels. On the pretest, JR scored 2 out of 7 correct, or 29% on short vowels. For the word *pet*, she used the vowel –i instead of -e. For the word *dig*, she used the vowel –e instead of –i. For the word *rob*, she used the vowel–a instead of –o. For the word *gum*, she used the vowel –o instead of –u. For the word *stick*, she used the vowel –e instead of –i. On the posttest, JR scored 4 out of 7 correct, or 57% on short vowels, so she improved by 2 points. For the word *dig*, she again used the vowel –e instead of –i. For the word *gum*, she used the vowel –a instead of –u. For the word *stick*, she used the vowel –e instead of –i.

Beginning and ending digraphs is the fourth feature on the PSI. On the pretest, JR spelled 1 of 3, or 33% of digraphs correctly. Here two mistakes were with the words *shine* and *chewed*. For the word *shine*, she used –ch instead of –sh, and with the word *chewed*, she used the letter –s instead of –ch. On the posttest, JR spelled all 3, or 100% of the beginning and ending digraphs correctly.

The fifth feature on the PSI is initial blends. On the pretest, JR spelled 1 out of the 5, or 20% of blends correctly. For the word *stick*, she used the letter –s instead of –st. For the word *dream*, she used the letter- y instead of -dr. For the word *blade*, she used the letter –d instead of -bl, and for the word *fright*, she used the letter –f instead of -fr. On the posttest, JR spelled 3 out of the 5, or 60% of blends correctly, so she improved by 2 points. The two words she misspelled were *dream* and *fright*. For *dream*, she used the letter –g instead of –dr, and for *fright*, she again used the letter –f instead of the –fr blend.

Long vowels is the sixth orthographic feature on the PSI. JR spelled 0 of 7, or 0% correctly on the pretest. For the word *hope,* she used the vowel –o, but left out the final –e. For the word *wait,* she used the vowel –e instead of –ai. For the word *shine,* she used the vowel –a instead of –i, and left out the final –e. For the word *dream,* she used the vowel -i instead –ea. For the word *blade,* she used the vowel –e instead of –a, and she left out the final-e. For the word *coach,* she used the vowel –o instead of –oa, and for the word *fright,* she used the vowel –e instead of –igh. On the posttest, JR spelled 1 of 7, or 14% of words correctly (*hope*). For *wait* she used the vowel –a instead of –ai, and she included a final -e. For *shine* she again used the vowel –a instead of –i, but she did include the final –e this time. For *dream* she used the vowel -e instead –ea. For *blade* she used the vowel –i instead of –a, and she again left out the final-e. For *coach* she used the vowel –o instead of –oa just as she had done on the pretest. For the word *fright* she used the vowels -oie instead of the letters –igh.

The seventh and eighth spelling features on the PSI are "other" vowels and inflected endings. JR spelled 0 out of 1, or 0% of the words correctly for both of these features on the pretest. The spelling word for both the "other" vowels and inflected endings category was *chewed*. On the pretest, she used the vowel –a instead of –ew, and she used the letter –t instead of –ed as the inflected ending. On the posttest, she again spelled 0 out of 1, or 0% of the words correctly. This time, however, for the word *chewed,* she used the vowel –u instead of –ew, and she used the letter –d instead of-ed as the inflected ending.

Conclusion

The researcher gathered data from the pre and posttest of the Primary Spelling Inventory (Bear et al., 2008) to measure the effectiveness of the intervention on JR's ability to spell. The intervention was successful based on the results of the pre and posttests which demonstrate that

JR did improve in her ability to spell. Prior to the intervention, JR's developmental level was at the late emergent stage of spelling. At the end of the intervention, the posttest results showed JR progressed to the middle letter name-alphabetic stage. While this chapter detailed the results of the intervention, the next chapter will discuss these results further by making connections to other research, presenting the study's strengths and limitations, and including recommendations geared towards the home and school. Connections will also be made to Wisconsin Common Core State Standards and special education law.

Chapter 5: Conclusions

The intervention in this case study was specifically designed for JR, a girl with learning disabilities who was struggling to achieve in her third grade classroom. The intervention was aligned with current research and the Wisconsin Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Each part of the intervention complied with IDEA (Appling & Jones, 2008) and took into account the child's strengths and areas of need. This final chapter will offer a further and more interpretive explanation of the study's results. It will also describe the study's strengths and limitations, and finally, give recommendations for the student as she moves forward in her studies.

Connections to Existing Research

The purpose of this case study was to determine if the instructional use of word and picture sorts could help a struggling third grade student with learning disabilities improve her skills in spelling. It was hypothesized that an intervention based on word and picture sorts would help the participant improve her abilities in this aspect of literacy. This hypothesis was confirmed by a comparison of JR's pre and posttests scores on the Primary Spelling Inventory (Bear, Invernizzi, Templeton, and Johnson, 2008). JR's percent of words spelled correctly increased from 13% on the pretest to 33% on the posttest. Foundational to the development of this case study were several previous published studies that were similar in nature, and whose findings helped to support the hypothesis.

Word sorting is an activity that is at the heart of a larger system of instruction that has been referred to as word study. Word study can be described as a system of instruction in which instructors use students' spelling attempts, or mistakes, as a guide to designing differentiated

instruction in the areas of phonics, word recognition, spelling or vocabulary (Bear et al., 2008). According to Bear et al. (2008), there are two fundamental tenets to this system of word learning. One of these states that, "student's learning of phonics, spelling, and vocabulary is based on their developmental or instructional level" (p. 21). The intervention sessions were conducted in either a one-on-one, or a small group setting, and focused on word features that fell within her specific developmental level of spelling. This allowed the researcher to meet the participant where she was, so to speak, and provide the appropriate scaffolding needed to help JR move forward.

The basic theory on the efficacy of word sorting is that the activity is based on categorization. According to Gillet and Kita (1979), "Categorization is a ubiquitous cognitive activity which research indicates is involved in concept formation as well as in perception, memory, problem solving, and almost all linguistic behavior" (p.120). Categorizing is a basic, almost instinctual way of making sense of the world, and it is responsible for much of children's natural learning. "In particular, categorization is intimately involved in language acquisition and the formation of verbal concepts" (Gillet & Kita, 1979, p. 121).

Since the very essence of word sorting is categorization, and it requires students to compare and contrast words according to spelling, sound, or meaning, it is not surprising that the findings of such studies, including the present study, indicate that word sorting has such a great potential to increase students' abilities in literacy and language in general. Gillet and Kita (1979) suggest that children are seemingly "hardwired" to categorize the things around them; therefore JR's intervention was designed to engage and activate these presumed innate abilities.

An additional noteworthy benefit of word sorting is the fact that the categorizing that takes place during sorting requires students to use higher levels of critical thinking. During word sorts, students' independent judgment and analysis are required to make distinctions between

various sounds and their corresponding patterns (Bear et al., 2008). Judgment and analysis are two intellectual abilities or skills that are at the very top of Bloom's taxonomy of learning domains (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, Raths & Wittrock, 2000). In the urban public school in which the researcher is a teacher and JR is a student, there is a constant push for teachers to design lessons that require students to use higher levels of thinking as described in Bloom's taxonomy. Therefore, it was important that JR's intervention was designed in a way that would allow her to exercise these higher levels of thinking. The critical thinking skills employed during word sorting is in direct contrast to certain phonic or spelling programs that have often been referred to as "traditional" methods of spelling instruction. The "traditional" method of spelling instruction was a term that surfaced quite frequently during the research that was done for this case study, much of which is documented in chapter two. A common practice in traditional methods of spelling instruction requires rote memorization of spelling rules, or memorization of entire words on a spelling list. Memorization and recall are skills at the very bottom of Bloom's taxonomy (Anderson et al., 2000) and require a minimal level of critical thinking. Additionally, the skills taught in traditional methods of spelling instruction often do not transfer to authentic writing tasks (Brandt & Gielbelhaus, 2000). In contrast, word sorting requires students to actively explore orthographic features and sound-letter patterns. This type of exploration allows students to construct their *own* understanding of how words work. When a student actively constructs his or her own knowledge, as opposed to passively receiving information from a teacher, the knowledge is more likely to be fully internalized by the student. An internalization of a language's orthography and its patterns is important because the patterns that are learned are not as easily forgotten by the student then. This is in contrast to information that is learned through basic memorization, such as lists of

random spelling words. The task of rote memorization of spelling rules or lists of spelling words typically does not result in an actual internalization, or information being integrated into one's existing schemas or long-term memory (Bear et al., 2008).

When information or skills are internalized and stored in one's long-term memory, they can easily be transferred to different, yet related tasks. As Abbott (2001) points out, "the goal of spelling instruction has always been to promote transfer of learned spelling information to unknown words and to other literacy areas of reading and writing" (p.11). Given that there are literally thousands of words that a student will encounter, just in the elementary years, it is unreasonable to think that the learning of word-specific knowledge, which is the norm in traditional spelling instruction, would be adequate in helping students develop the transfer skills necessary to decode all the unfamiliar words that they will come across. Studies have shown that literacy skills acquired during word study-based interventions, on the other hand, *can* help students transfer those skills to later tasks. Abbott's (2001) study showed that spelling instruction based on word study can produce better scores for transfer of orthographic knowledge with high- and low-frequency untaught words compared to traditional spelling instruction. Elliott and Rietschel's (1999) study showed how a word study program, including word sorting, led to an increase in their students' spelling skills in their independent writing. It was directly stated in JR's IEP that she had difficulties in retaining and using previously taught skills. Therefore, it was important that the intervention was designed in such a way that it would minimize the possibility of the knowledge and skills being forgotten as soon as the intervention concluded. The categorization and critical thinking employed in the word sorts offered a better chance of an internalization of the knowledge and skills learned, so that they could be more easily transferred to other literacy tasks that JR would face in the future.

In addition to the above-mentioned concerns, the researcher wanted the instructional activities in JR's intervention to contain as few explicit or formal rules as possible, and that the amount of time actually spent "teaching," so to speak, was limited. The rationale behind this decision was based partly on research. Brandt and Gielbelhaus (2000) state quite frankly that their research has led them to believe that, "trying to teach spelling by rules or in isolation does not work" (p.3). They claim that this is due, at least in part, to the fact that the English language contains so many exceptions to its rules (Brandt & Gielbelhaus, 2000). The other factor in this decision stemmed from the researcher's personal knowledge of JR as a student. She was an incredibly distractible student, and she became bored very quickly during teacher-led instruction. Word sorting proved to be an ideal activity for this intervention because it required very few actual rules. In addition, it was student-centered and it allowed JR to construct her own knowledge about how words work.

The one-on-one and small group sessions allowed the researcher to talk to JR (as well as the others) about her attitudes, feelings and her struggles. At times she was asked questions related to how she felt about being unable to read and write while the others in her room were able to. She would say that it made her unhappy, and that she wished that she could do what the other students were able to do. She would be asked if she thought that the activities that we were doing would help her to become better at reading and writing. She would claim that she thought they would. These types of conversations were had often to get to know her on a more personal level and attempt to get her excited or motivated about our activities.

Immediately after having these types of informal discussions, the researcher would ask her something like, "So, are you ready to do this then?" and she would become excited and say yes. This was my way of "pumping her up," so to speak. In Mathewson's (1994) model, this

type of exchange, or teacher cue would be considered peripheral route persuasion- a teacher cue to evoke feelings in a student, which can help to motivate a student to engage in some literacy task. What also helped was the idea that word sorting is game-like in nature, and JR actually *enjoyed* doing it. This could not be said, quite unfortunately, for the vast majority of the literacy activities that JR experienced in her third grade classroom. It was also the case in virtually all of the studies involving word sorts, which were reviewed in chapter two, that the participants viewed the word sorting activities as highly enjoyable. As Mathewson's (1994) model suggests, students do better when they have positive attitudes and the proper motivation to engage in literary tasks. From the very beginning, it was paramount that the researcher took JR's attitude, motivation, and cornerstone concepts into consideration when designing her intervention.

Connections to Wisconsin Common Core State Standards and IDEA

As noted in chapter one, the intervention used in this study was directly connected to the Wisconsin Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) for reading and language arts. Standards from the third grade were not used, because JR's literacy skills were not at the third grade level. In order to work within JR's zone of proximal development, the standards were taken from kindergarten, first, and second grade. The bulleted list that follows presents the standards that were addressed in JR's intervention:

Students will be able to:

- Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (CVC) words.
- Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words
- Associate the long and short sounds with common spellings (graphemes) for the five major vowels.
- Distinguish long from short vowel sounds in spoken single-syllable words

- Orally produce single-syllable words by blending sounds (phonemes), including consonant blends
- Know the spelling-sound correspondences for common consonant digraphs
- Know final -e and common vowel team conventions for representing long vowel sounds
- Distinguish long and short vowels when reading regularly spelled one-syllable words

It is also important to note that the intervention was in compliance with IDEA (Appling & Jones, 2008). JR's Individual Educational Program (IEP) was closely considered during the development of the intervention. All instructional sessions took place in the least restrictive environment, and they made use of JR's strengths and interests to help build skills in the areas where she needed improvement.

Explanation of Results

The intervention developed for JR was designed to increase her abilities in the area of spelling through the instructional use of word and picture sorts. A comparison of JR's pre and posttest scores on the Primary Spelling Inventory, which served as the assessment for this study, showed that overall gains were made in JRs spelling abilities.

It is important to note that, while JR only spelled three more words correctly on the posttest than she did on the pretest, this does not mean that her skills in spelling did not increase over the course of the study. JR was at the emergent spelling stage prior to participating in the interventions and moved to the middle letter name-alphabetic spelling stage at the end of the interventions. There needs to be a distinction between orthographic knowledge and spelling achievement, or the ability to spell words correctly (Abbott, 2001). While JR still spelled the majority of the words incorrectly, even on the posttest, the results still indicate a gain + 29% in her spelling of individual word features. This means that there was definite improvement in her orthographic knowledge in general. The true nature of her improvement can only be seen and understood by conducting a deeper analysis into specific *features* of the words.

An example of a deeper analysis into specific word features could be with the word *wait* on the PSI. On the pretest, JR spelled the word *wait* as *guet*, and on the posttest, she spelled *wait* as *wate*. In the intervention, she did not work with the letter –w or its sounds, so her knowledge for how she knew to use the letter –w cannot be accounted for this word on the post-test. Nor did JR work on the –ai pattern that produces the long –a sound. She did, however, work on VCVe pattern of long vowel sounds. The fact that she used the correct vowel –a, and a final –e when spelling the word *wait*, demonstrates that her spelling had become more sophisticated. If the word on the posttest had been *date* instead of *wait*, it is reasonable to assume that she would have spelled the word correctly (given that the pre and posttest showed that she already knew the initial –d sound). This example indicates that growth likely did occur in JR's knowledge of English orthography by the end of the intervention. As a complete side note here, it would be worthwhile to illustrate how having knowledge of an ELL's native language can help in understanding his or her spelling attempts. On the surface, JR's pretest spelling of *guet* for *wait* may seem quite illogical, but knowledge of the Spanish language's sounds can help explain it, at least in part. For example, in this particular instance it is helpful to know that in Spanish, the -gu digraph produces a sound that is quite similar to the sound the letter –w makes in English. An ELL's confusion between two languages' spelling/sound correspondences may lead to teachers misdiagnosing a student's abilities, or lack thereof. Therefore, it would be wise for teachers to keep this in mind when judging an ELL's spelling attempts.

Another way in which JR's spelling abilities may have improved as a result of the intervention was that, on her posttest, she seemed to pay more attention to all the sounds of a given word. For example, on the pretest, she spelled the word *fright* as *fet*. However, on the posttest, she spelled *fright* as *foiert*. Her spelling was still incorrect, but her addition of the

vowels -o, and –i, and the consonant –r on the posttest, may indicate that she was paying closer attention to all the sounds in the words. JR was only asked to spell 15 of the 26 words on the Primary Spelling Inventory (PSI) for the pre and posttest, and there were longer words towards the end of the test. More evidence of this particular type of improvement could potentially have been gathered if there had been more words of greater length that JR had been required to spell. This type of improvement has been found in previous studies. For example, Fresch and Wheaton (1992), in their study of word sorts, also found that by the end of the intervention, the participants were paying more attention to all the sounds when attempting new words.

Strengths and Limitations

It is important that the strengths and limitations are discussed when considering a study's results. This particular intervention had several strengths. For one, the format of each instructional session was the same. This provided JR with consistency and familiarity, which helped her to know what was expected of her for each lesson. Another strength of this study was that it allowed for the activities to be done in either a one-on-one setting, or in small groups. This was important because JR was much more comfortable working in a small group than one-on-one. As noted earlier, the researcher began the sessions working solely with JR. For the first few sessions, JR was very resistant to the activities. She was uncooperative, and as a result, she likely missed out on valuable learning opportunities. The activities took longer in the beginning, and she made more mistakes in the sorting and the spelling activities. However, after including a few of her classmates, her attitude completely changed. She became much more engaged, and she even started to enjoy the lessons. For students who work better in small groups than individually, word and picture sorting can be a fun and engaging way to learn about English orthography.

All studies will have certain limitations as it is impossible to control for all possible variables. This case-study is no exception, and it does have its limitations. One particular limitation was its duration. The intervention consisted of only 18 sessions, and lasted only one month, approximately. Because of this, there were several spelling features on the PSI that were not covered during the instructional sessions. One example was the –ai pattern in the word *wait*. None of our sessions included a word/picture sort that included the –ai spelling pattern, and she spelled –*wait* wrong on both the pre and posttest. However, if there had been more time for the intervention, this spelling feature could have been covered. Perhaps then she would have spelled that word correctly on the PSI posttest. Since an increase in JR's spelling abilities was demonstrated despite the intervention's short duration, it is reasonable to assume that a longer intervention of this type would have resulted in even higher increases in her ability to spell.

One area of the research study that was both a strength and limitation was the small group instruction with the participant. Having a small group for the study provided JR with immediate feedback, adult guidance, and an intervention designed specifically to her area of need. This type of setting is ideal when working with struggling students; however it is not always feasible to provide this type of instruction in a classroom of students with a variety of needs and abilities and limited adult resources.

Aside from the intervention, JR was also receiving instruction from her classroom teacher and a paraprofessional during her normal school-day routine. Therefore, it is hard to know if the spelling gains that were made on JR's PSI posttest were due entirely to the intervention, or if they were partly a result of instruction that was occurring at other times in the school day. This could also be considered a possible limitation of this case study.

Recommendations

Based on the existing research, the results of this case study, and the researcher's observations, several recommendations can be made to ensure that JR continues to move forward in her education. The researcher has observed that the cognitive demand of negotiating between two languages when one has a learning disability can be very frustrating, therefore, receiving instruction in one language versus two may be recommended for a child. Students in bilingual classes are required to switch back and forth between the two languages frequently and often times without notice. There are times when a given lesson may be taught in both languages (the timing of the switch being arbitrary). There are also times when a textbook may be in one language, but the lecture is in the other, or vice versa. This happens for a variety of reasons. For example, a bilingual class may be in "Spanish week," but will only have the necessary texts in English. Again, these claims are based solely on the observations of the researcher, but it has been observed over the course of several years, in several classrooms (including JRs), and at various bilingual schools. One may argue that this is simply a problem of a school not having the needed materials, or with a given teacher not following the proper bilingual-education protocol. This may be true, but what is important is that it *is* happening, and the researcher has noticed that it often causes incredible confusion, including with JR. One specific example is with the vowels. The vowels in English and Spanish are the same (the actual letters), but they have different sounds from each other. For example, the name of the letter –e in English is pronounced exactly the same as the name of the letter –i in Spanish. Based on the researcher's observations, it is very confusing for *all* ELLs to remember the differences between English and Spanish vowels, especially in the early grades, but it is exceedingly hard for students with learning disabilities to differentiate and remember them. At the beginning of every word sort for

the current case-study, the researcher went over the vowels (the names of the letters) with JR. Even at the very last session, JR was confusing the English and Spanish vowels. Not once was she able to say them correctly on her own. This anecdote is only mentioned to exemplify some of the difficulties that bilingualism and bilingual education can present. According to JR's IEP, and the observations of the researcher, JR has difficulties in retaining and using previously taught skills. Because of her placement in a bilingual class, effectively, she is learning and expected to master twice as much information as her monolingual peers (the phrase "twice as much" being allegorical in nature). It is because of this fact, and her difficulties in retention, that the researcher believes that JR *may* have an easier time in a monolingual classroom where she will only have to negotiate one language. The researcher feels comfortable making this assertion based on his personal knowledge of two other learning disabled students at JR's school who have found greater success after making the switch from a bilingual to a monolingual classroom. This however, is something that must be ultimately be decided by JR and her family.

When considering ELLs, it is very important to make a distinction between social language and academic language. Social language, or basic interpersonal communication skills (BICS), are not very demanding cognitively, and can be developed within six months to two years after arrival in a new country, or from the time of initial contact with a new language (Gottlieb, 2006). BICS tends not to get more cognitively demanding, generally speaking, as a person grows older. JR's English vocabulary, or her BICS, has developed to the degree that she can easily engage in every day social situations which occurs with her peers on the playground or any other time outside of a class' academic lessons.

Academic language, which refers to formal academic learning and subject area content material, has been referred to as cognitive academic language proficiency (CALPS). According

to research, it typically takes seven to ten years for ELLs to "catch up" to their peers in the area of CALPS (Gottlieb, 2006). Academic language proficiency is what is needed for *all* students to succeed in school. This type of language is context reduced; it is information that may be read from a textbook or presented by the teacher. As a student goes up in the grades, the content of textbooks and the language needed to express new ideas becomes more and more difficult and cognitively demanding. JR's CALPS is highly underdeveloped, and this is probably due to a variety of reasons. For one, she is exposed to very little English outside of the school as her family does not speak English. Since she is only reading at the kindergarten level, and is unable to participate fully in the grade level content, she is not being exposed to the rich, new vocabulary to the extent that her peers are. Based on the researcher's personal knowledge of JR and her family, he can also confidently make the assertion that JR is not exposed to as many rich and intellectually stimulating life experiences outside of school that many students from more affluent circumstances may enjoy. Such life experiences build literal warehouses of background knowledge and schemas about the world in the minds of children. This is the type of knowledge that all educators, particularly urban educators, can easily take for granted. Research has shown that having background knowledge about a given topic is one of the strongest determiners of whether or not a reader will comprehend a particular text (Fisher, Ross & Grant, 2010). Right now, JR is at the developmental level of literacy where she is still learning to read. With the proper support, her decoding and word recognition skills will eventually develop, and she will be reading to *learn*. However, if JR has a highly underdeveloped academic vocabulary and a lack of background knowledge about the world around her, she will still continue to struggle with reading comprehension, which is the ultimate goal of reading in the first place.

For the reasons described above, the researcher recommends that JR's teachers use word and picture sorting, not only to help her acquire literacy, but also for the content areas such as math, science and social studies. According to Bear et al., (2008), "sorting pictures or words by concepts or meaning is a good way to link vocabulary instruction to students' conceptual understanding. Concept sorts are appropriate for all ages and stages of word knowledge and should be used regularly in the content areas" (p.55). Concept sorts can be used to find out what students already know about a topic, and to help build background knowledge and relevant vocabulary when students posses only minimal knowledge of a particular subject. These types of sorts can be especially helpful to ELLs. Even if an ELL does not know the words in English, he or she could still sort pictures and images into different categories and then make contrasts between the various categories. If the names of the images are printed on the sorting cards, which they should definitely be, vocabulary and the related content is being learned simultaneously **(**Bear et al., 2008).

Conclusion

This case study was developed to investigate the effects of a word and picture sort intervention on a student's skills in the area of spelling. The development of the intervention was based on the finding of existing research into similar topics, and was in accordance with the Wisconsin Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), and the Individuals with Disabilities Act (Appling & Jones, 2008). The intervention was delivered over the course of a month with a total of 18 sessions. The study's data results were analyzed, reported, and the strengths and limitations of the study were detailed. Lastly, the researcher used the results and analysis to make recommendations for the student who was the focus of the case study. The

recommendations were geared toward both the home and school, and were intended to meet the specific literacy needs of the student.

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Appendix A

Beginning

Name: JR Date: 4/28/11

Primary Spelling Inventory (PSI)

(The student writes the words that administrator says)

1. fan
2. pit
3. deta
4. rat
5. jop
6. guet
7. gom
8. sled
9. set
10. chan
11. yim
12. ded
13. goch
14. fet
15. sat
16.
17.
18.
19.
20.

Appendix B

Name: JR Final Date: 5/27/11

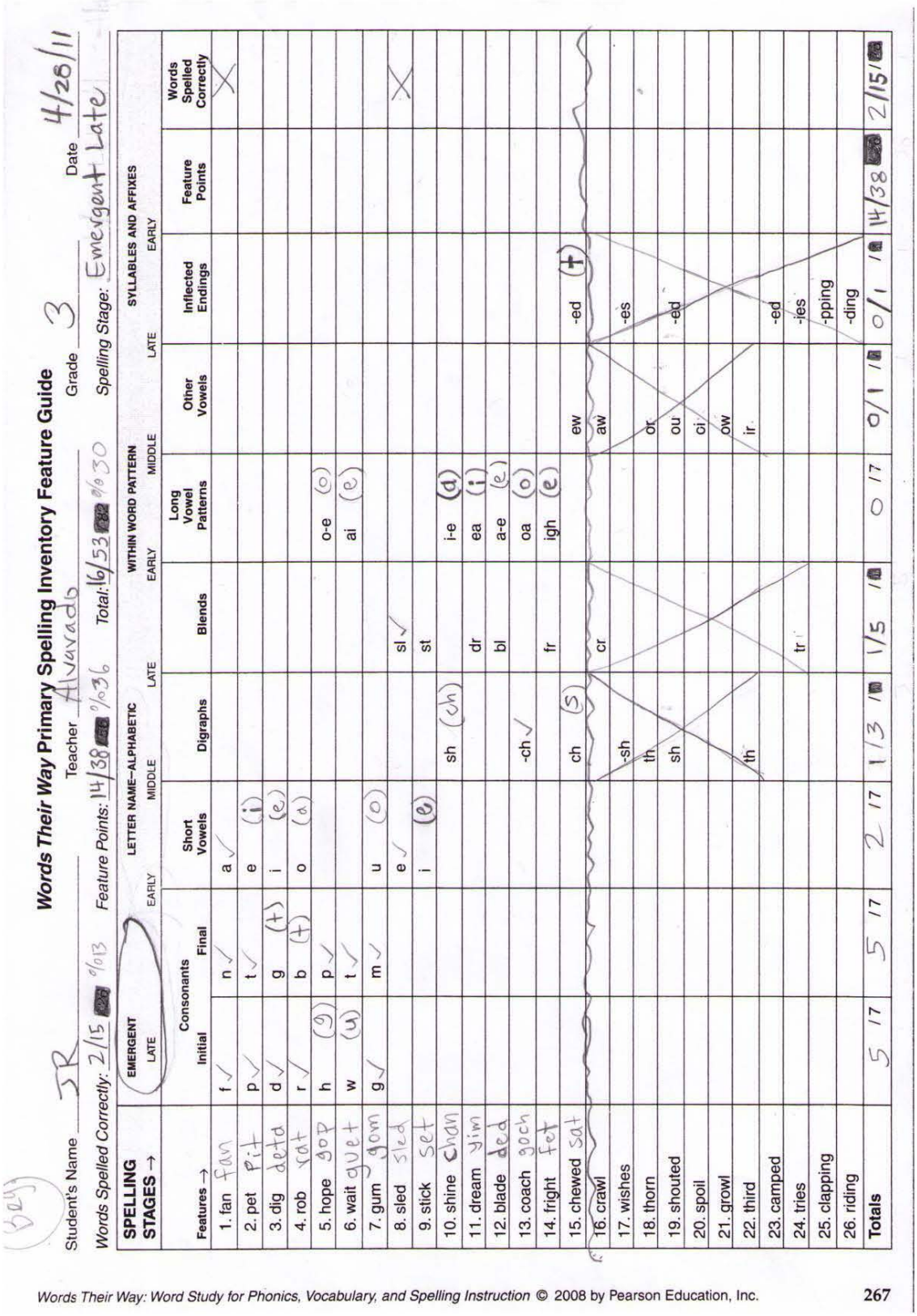
Primary Spelling Inventory (PSI)

(The student writes the words that administrator says)

1. fan
2. pet
3. deg
4. roy
5. hope
6. wate
7. gam
8. sled
9. steg
10. Shane
11. gem
12. bib
13. coch
14. Foiet
15. chud
16.
17.
18.
19.
20.

A

Appendix C



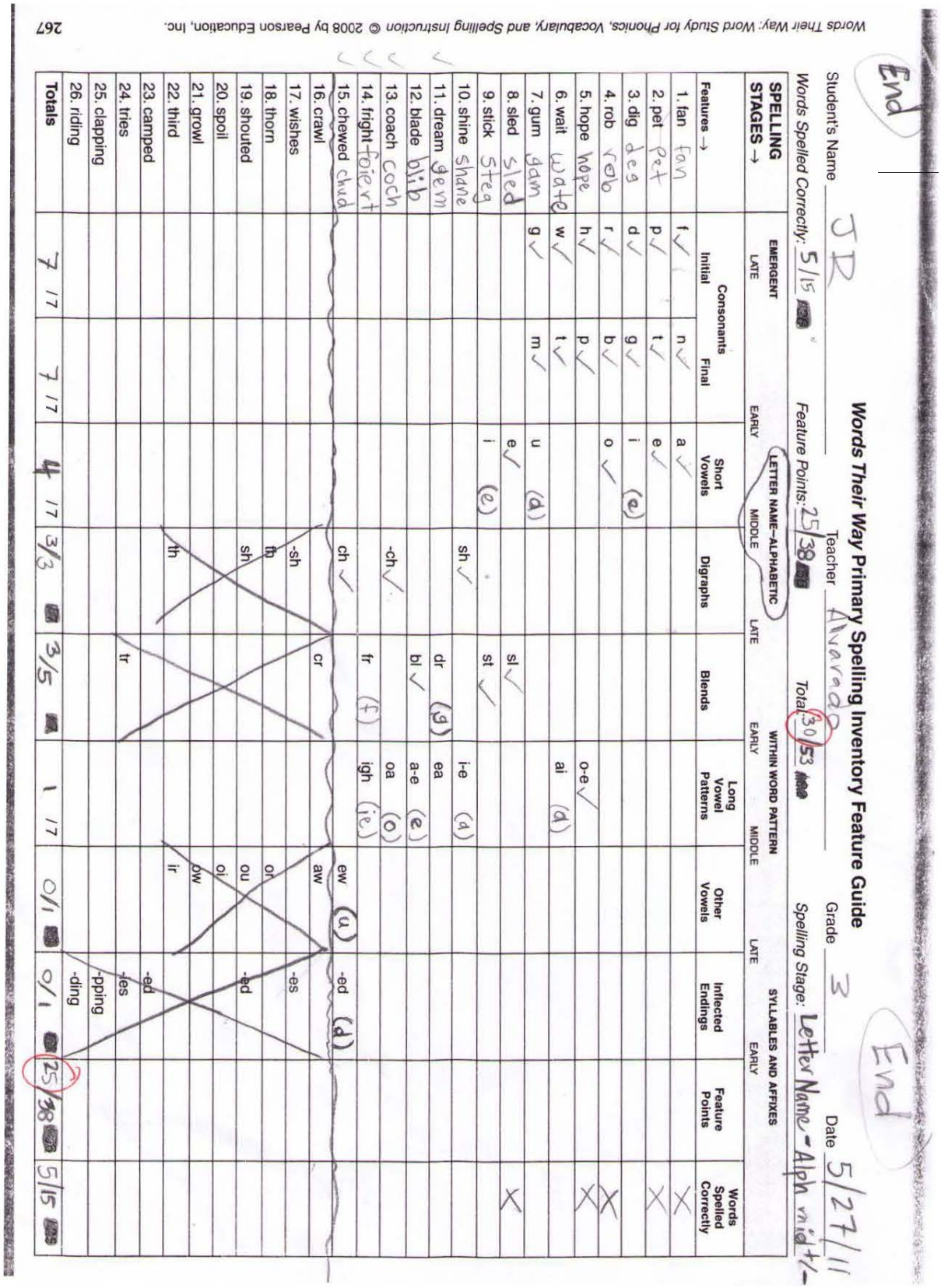
Words Their Way Primary Spelling Inventory Feature Guide

Student's Name JR Teacher Alvarado Grade 3 Date 4/28/11

Words Spelled Correctly: 2/15 6% 13 Feature Points: 14/38 37% 36 Total: 16/53 30% 30 Spelling Stage: Emergent Late

SPELLING STAGES →	EMERGENT LATE	LETTER NAME–ALPHABETIC EARLY		MIDDLE		LATE	WITHIN WORD PATTERN EARLY		MIDDLE		LATE	SYLLABLES AND AFFIXES EARLY			
Features →	Consonants Initial	Consonants Final	Short Vowels	Digraphs	Blends		Long Vowel Patterns		Other Vowels			Inflected Endings		Feature Points	Words Spelled Correctly
1. fan fan	f ✓	n ✓	a ✓												X
2. pet pit	p ✓	t ✓	e (i)												
3. dig dete	d ✓	g (t)	i (e)												
4. rob rat	r ✓	b (t)	o (a)												
5. hope gop	h (g)	p ✓					o-e (o)								
6. wait quet	w (u)	t ✓					ai (e)								
7. gum gom	g ✓	m ✓	u (o)												
8. sled sled			e ✓		sl ✓										X
9. stick set			i (e)		st										
10. shine chan				sh (ch)			i-e (a)								
11. dream jim					dr		ea (i)								
12. blade ded					bl		a-e (e)								
13. coach goch				-ch ✓			oa (o)								
14. fright fet					fr		igh (e)								
15. chewed sat				ch (s)					ew			-ed (t)			
16. crawl					cr				aw						
17. wishes				-sh								-es			
18. thorn				th					or						
19. shouted				sh					ou			-ed			
20. spoil									oi						
21. growl									ow						
22. third				th					ir						
23. camped												-ed			
24. tries					tr							-ies			
25. clapping												-pping			
26. riding												-ding			
Totals	5 /7	5 /7	2 /7	1 /3	1 /5		0 /7		0 /1			0 /1		14/38	2 /15

Appendix D



End

JR

End

Words Their Way Primary Spelling Inventory Feature Guide

Student's Name _____ Teacher Alvarado Grade 3 Date 5/27/11

Words Spelled Correctly: 5/15 *Feature Points:* 25/38 *Total* 30/53 *Spelling Stage:* Letter Name - Alph mid +/-

SPELLING STAGES →	EMERGENT LATE	LETTER NAME–ALPHABETIC EARLY	LETTER NAME–ALPHABETIC MIDDLE	LETTER NAME–ALPHABETIC LATE	WITHIN WORD PATTERN EARLY	WITHIN WORD PATTERN MIDDLE	SYLLABLES AND AFFIXES LATE	SYLLABLES AND AFFIXES EARLY		
Features →	Consonants Initial	Consonants Final	Short Vowels	Digraphs	Blends	Long Vowel Patterns	Other Vowels	Inflected Endings	Feature Points	Words Spelled Correctly
1. fan fan	f ✓	n ✓	a ✓							X
2. pet pet	p ✓	t ✓	e ✓							X
3. dig deg	d ✓	g ✓	i (e)							
4. rob rob	r ✓	b ✓	o ✓							X
5. hope hope	h ✓	p ✓				o-e ✓				X
6. wait wate	w ✓	t ✓				ai (a)				
7. gum gam	g ✓	m ✓	u (a)							
8. sled sled			e ✓		sl ✓					X
9. stick steg			i (e)		st ✓					
10. shine shane				sh ✓		i-e (a)				
11. dream geem					dr (g)	ea				
12. blade blib					bl ✓	a-e (e)				
13. coach coch				-ch ✓		oa (o)				
14. fright foiert					fr (f)	igh (ie)				
15. chewed chud				ch ✓			ew (u)	-ed (d)		
16. crawl					cr		aw			
17. wishes				-sh				-es		
18. thorn				th			or			
19. shouted				sh			ou	-ed		
20. spoil							oi			
21. growl							ow			
22. third				th			ir			
23. camped								-ed		
24. tries					tr			-es		
25. clapping								-pping		
26. riding								-ding		
Totals	7 /7	7 /7	4 /7	3/3	3/5	1 /7	0/1	0/1	25/38	5/15