The Effects of Explicit Word Study Instruction on Fourth Grade Word Knowledge, Reading Comprehension, Oral Reading Fluency, and Everyday Spelling Accuracy

Rebecca L. Kroenke
B.A., Southwest Missouri State University, 1989
M.S., Webster University, 1991

Submitted to the Graduate Department and Faculty
of the School of Education of Baker University
in partial fulfillment of the requirements for the degree

Doctor of Education
in
Educational Leadership

July 3, 2012

Dissertation Committee

_____

Major Advisor

_____

_____

_____

Abstract

The purpose of the present study was to examine the effect on student achievement in the areas of word knowledge, reading comprehension, oral reading fluency (ORF), and everyday spelling accuracy, when explicit word study instruction was provided versus spelling instruction using the district's adopted basal spelling curriculum. The review of literature begins by discussing Constructivist theory and Zone of Proximal Development (Vygotsky, 1978). This is followed by a historical review of orthography research focusing on the works of Charles Read, Edmund Henderson, and Donald Bear. Studies exploring the relationship between reading comprehension, reading fluency, and explicit word study instruction, as well as the theories supporting explicit word study instruction in the classroom, are shared.

The researcher used a purposive sampling method and performed quasi-experimental pretest and posttest research that used a test group and control group comprised of fourth graders from a Mid-western suburban school district. Data was collected and evaluated using the Elementary Spelling Inventory (ESI) (Bear, Invernizzi, Templeton, & Johnston, 2012), the Acuity Predictive Benchmark Assessment, the STAR Reading Assessment, and student timed writing samples over a seven and a half month period.

The results from independent samples *t* tests did not indicate statistically significant differences between the test groups' and control groups' ESI growth scores, Acuity Predictive Benchmark Assessment growth scores, and the STAR estimated oral reading fluency (ORF) growth scores. However, the test group students demonstrated higher achievement than those students in the control group, indicating that explicit word

study instruction may have an effect on students' basic word knowledge, as well as word knowledge in regard to comprehension, fluency, and everyday spelling accuracy. The results from an independent samples *t* test did indicate a statistically significant difference between the test group's and control group's independent timed writing growth scores, providing evidence explicit word study instruction had an effect on students' word knowledge application in everyday spelling accuracy. The test group's growth score was greater than the control group's growth score.

Recommendations for future research include conducting longitudinal research by following a cohort of students receiving explicit word study instruction throughout the intermediate grades (third through fifth grade). Replication suggestions included studying students who received explicit word study instruction in classrooms that also used the writer's workshop model of instruction, as well as conducting qualitative research by incorporating a survey component into the current research design. Using a mixed-methods design for research allows for exploration of the teachers' and students' perspectives toward the spelling instruction models. Suggestions for further research concluded with looking at student transfer of explicitly taught spelling patterns to written communication and using Ganske's spelling inventory as an alternative measure to analyze student word knowledge acquisition and movement among the orthographic developmental levels.

Dedication

This dissertation is dedicated to my dad and mom, Donald and Sandra French. From the beginning you encouraged me to take risks, to reach for the stars, and to seek knowledge. Because of the love and support you both gave so willingly, I learned to believe in myself and to put forth the highest effort and quality no matter the endeavor. It is because of you, Dad and Mom, I am the person I am today.

Thanks for believing in me!

Acknowledgements

I would like to acknowledge and thank my family, friends, and colleagues for the unwavering support, encouragement, and belief you shared with me during the last three years. The journey has often been difficult, and at times emotional, but knowing each of you were in my corner cheering me on made it possible.

To my husband, Lindsey, thank you for your undying support and commitment to making my dreams a reality. You have certainly done more than your share in keeping our home and family afloat and never once did you complain. Thank you for being an amazing father, and my best friend.

To my son, Joey, thank you for your patience and understanding as Mom had to sit and do her "homework" instead of watching a movie. Your random "I love you so much!" love notes that would appear on my laptop reminded me daily to stop and thank God for the treasures I have in my life.

To my dad, Don, a man of supreme integrity, of strong work ethic, and of unconditional love, you have been there for me every step of the way for the past forty-five years. Thank you for setting the bar high and never accepting anything but my best. And, yes, Dad, this is my best!

To my sister, Cindy, thank you for taking my ten o'clock phone calls on Wednesday nights as I drove the dark stretch of highway home after class. Our talks always made me laugh and helped me to stay grounded.

To my advisor, Dr. Trish Bandre, thank you for your friendly words of encouragement and time in helping me complete my paper. Your calm demeanor often kept me from coming unglued and your tactful way of wording emails so I would not

panic when I opened my edits helped me to reach the end. I appreciated your insight and knowledge and found them invaluable as we spent countless hours editing and revising.

To Peg Waterman, thank you for your patience in explaining the numbers! Your help with the statistics proved to be priceless, and I could not have completed this paper without you.

To Dr. Dennis King, thank you for helping me see education from the 10,000-foot view. This was a true paradigm shift as I went from viewing the educational world through teacher's eyes to those eyes of an administrator.

To Dr. Mark Miles, colleague and friend, thank you for seeing in me something I had yet to discover. The opportunities you afforded me took my career in a new direction and opened up possibilities I had yet to dream. Your continued support and collegial conversations have helped me to navigate uncharted waters, and for this I am forever thankful.

To Dr. Jennifer Corum, thank you for your kind words and friendship. I appreciated your support and willingness to answer questions, as well as serve on my committee. Your knowledge of curriculum and guidance along my journey has been very helpful.

To my friend and colleague Dawn Dennis. When I began this journey three years ago, I didn't imagine the degree came with fringe benefits; but you, my dear have become a steadfast friend. Thank you for talking me off the ledge at times and for our Wednesday night dinners at Panera. I could not have done this without you!

To my friend, Kim Fette, thank you for making me laugh and adding years to my life! Your ability to see the big picture in all we do helps me to remember, while forging ahead, one must keep in mind the end goal.

Last but certainly not least, thank you to my stepmother, Patricia Hovis-French, who taught me to redefine fun. Your continuous support and encouragement, telling me all the while, "You can do this," helped me make it through some very bumpy spots in the road as I would call to complain, cry, or seek advice. Now, it's time to go out and find yet a new definition of fun!

Table of Contents

List of Tables

List of Figures

Chapter One

Introduction

Gregorian (2010) stated, "American students today are not meeting even basic literacy standards and their teachers are often at a loss for how to help them" (p. 2). The need to possess literacy skills, such as reading, comprehending, and writing, is imperative as the current generation of students moves toward graduation and is faced with the challenges of living in a digital world where information is at their fingertips. Access to a wide variety of information forces students to become critical consumers of text, requiring them to comprehend what they read and to identify credible material. Graham and Hebert (2010) suggested that many students are lacking the skills to meet grade-level literacy expectations, resulting in poor graduation rates. They further noted if students graduate, few are prepared for the literary demands required in college and career paths. The ability to communicate, globally and technically, is no longer an option for students of the 21st Century. It has become paramount for the future status of American culture (Graham & Hebert, 2010).

Members of the Council of Chief State School Officers and the National Governors Association met in the Spring of 2009 to address student achievement in the areas of English language arts (ELA) and mathematics (Kendall, 2011). Their goal was to establish a set of shared national education standards in order to prepare 21st Century students to compete globally with their peers. Teachers, as well as content experts, researchers, parents, and representatives from groups including the College Board and the National Association of State Boards of Education were consulted as the set of standards were drafted (Kendall, 2011). The National Council of Teachers of English and the

National Council of Teachers of Mathematics, as well as other subject area organizations, critiqued early drafts. The overarching goal was to provide a foundation of instruction in the primary grades and scaffold students' learning throughout the high school years. The resulting Common Core State Standards (CCSS) strive to offer educators the opportunity to equip students with the knowledge and skills necessary to enter into college coursework or trade schools successfully, while maintaining the integrity of preexisting effective state and international models (Council of Chief State School Officers & National Governors Association, 2011a; Locke, 2012). Standards in English language arts and mathematics emphasize on the inclusion of rigorous content and application of knowledge through the use of higher-order thinking skills (Council of Chief State School Officers & National Governors Association, 2011a). Comprehending and using text, both of which require deeper levels of cognitive thinking, effectively lie at the heart of the ELA Common Core State Standards (Council of Chief State School Officers & National Governors Association, 2011c).

Adolescent readers continue to struggle with reading comprehension and oral reading fluency despite strong instruction in the primary grades (Roberts, Torgesen, Boardman, & Scammacca, 2008). Roberts et al. (2008) advised that adolescent reading instruction should focus on five components: "word study, fluency, vocabulary, comprehension, and motivation" (p. 64). English language arts Common Core State Standards address these same components. According to the CCSS, comprehensive ELA instruction includes reading, writing, speaking and listening, language, and media and technology (Council of Chief State School Officers & National Governors Association,

2011c). A need for deeper levels of reading comprehension occurs as text complexity increases during the middle grades (Fisher, Frey, & Lapp, 2012).

Common Core State Standards identify the area of language, specifically vocabulary, as one component necessary for deepening text comprehension. Because vocabulary spans the ELA curriculum, but remains a component of comprehensive literacy instruction, it is identified as a separate strand with its own criteria (Council of Chief State School Officers & National Governors Association, 2011c). Specifically, one standard under vocabulary acquisition and use states: "Demonstrate understanding of word relationships and nuances in word meanings" (Council of Chief State School Officers & National Governors Association, 2011b, p. 51). For students to master this standard, their work with words must move beyond memorizing lists and definitions, rather they need to explore words and their meanings (Benjamin & Crow, 2010).

Explicit word study instruction, based on the orthographic developmental level (see p. 13 for definition) of the learner, encourages the exploration of word relationships and the link between spelling and meaning (Bear, Invernizzi, Templeton, & Johnston, 2012; Ganske, 2000, 2008). Vocabulary and word knowledge development, a component of explicit word study instruction, is inquiry based. This approach allows students to discover the many ways words work and aid in communication (Benjamin & Crow, 2010). According to Benjamin and Crow (2010) students must become familiar with words by knowing their root words, synonyms, antonyms, and derivatives. They recommend students explore words in a manner that encourages enjoyment. This includes such activities as word manipulation during games and sorts. Each experience allows them to know the word a bit better. Benjamin and Crow (2010) equate getting to

know a word to making friends. Attempting to make a word part of the working memory by looking up definitions in a dictionary is much like trying to make a friend by looking up a name in the phone book. It simply cannot be done. Explicit word study instruction based upon the orthographic developmental level of the learner provides students with the opportunity to learn spelling patterns and the relationship between spelling and meaning (Bear et al, 2012). Explicit word study instruction supports the tenets of the ELA Common Core State Standards. Using inquiry-based methods, explicit word study instruction requires students to "learn and use new words, a skill that will stay with them throughout school and beyond" (Davis, 2012, p. 3).

Background

During the 2010-2011 school year, the target district in the present study began the process of transitioning to Common Core State Standards (CCSS) as Missouri announced its membership in Smarter Balanced Assessment Consortium. A district committee comprised of teacher representatives from kindergarten through twelfth grade met to discuss the integration of CCSS with current state objectives and district learning objectives. The committee determined that student literacy achievement, a goal in the Comprehensive School Improvement Plan (CSIP), must be addressed to close a gap that appeared to exist between the state and district objectives and the CCSS. Current district instructional practices addressed surface level comprehension, rather than prompted deeper understanding of text. This would not allow students to meet the rigorous demands of CCSS. Increased text complexity required teachers to alter classroom instruction in order to deepen student comprehension (J. Corum, personal communication, May 9, 2011).

The target district adopted a quarterly cycle to review the Comprehensive School Improvement Plan (CSIP), which included a strategic plan outlining the district's goals and specific action steps for the 2011-2012 school year. The CSIP included five sub-areas of focus: financial, academic, customer, employee, and supervision. For each sub-area, the district convened a committee consisting of administrators and teachers to review data pertaining to that specific area of focus. The academic committee, of which the researcher was a member, used relevant data from the Missouri Assessment Program (MAP) and Missouri End-of-Course Exams (EOC), to write a district-wide literacy goal, mathematics goal, and achievement gap goal. These academic goals focused on implementing effective instruction in order to address student achievement in all areas as the target district prepares for the transition to full implementation of the Common Core State Standards. The committee decided in order to develop and enhance the quality of education and instructional programs, while improving performance and student achievement, district teachers must employ effective, research-based, teaching strategies. Through opportunities at the building and district levels, teachers participated in professional development focused on areas of concern, such as lack of reading comprehension and written language skills, to enhance the effectiveness of instruction.

One measure taken to improve student literacy achievement was the adoption of the basal reading (see p. 13 for definition), writing, and spelling program, *Treasures,* published by McGraw-Hill Companies in 2007. The district's instructional coaches participated in a train-the-trainer workshop conducted by McGraw Hill representatives in the summer of 2007 prior to implementation of the program that fall. After the McGraw Hill training, the district's instructional coaches conducted a four-hour professional

development session to help teachers familiarize themselves with the *Treasures* basal program (MacMillan/McGraw-Hill, 2007). Following the first year of implementation scores did improve; however, this percent of growth, if used to determine the projected linear district proficiency, was not sufficient to meet the target as outlined by district expectations in the CSIP (see Figure 1). District proficiency in 2010, represented by the red line in Figure 1, indicates the percent of growth since 2002. The blue line represents district literacy achievement expectations, while the black line shows the required yearly progression needed to meet district literacy achievement goals.

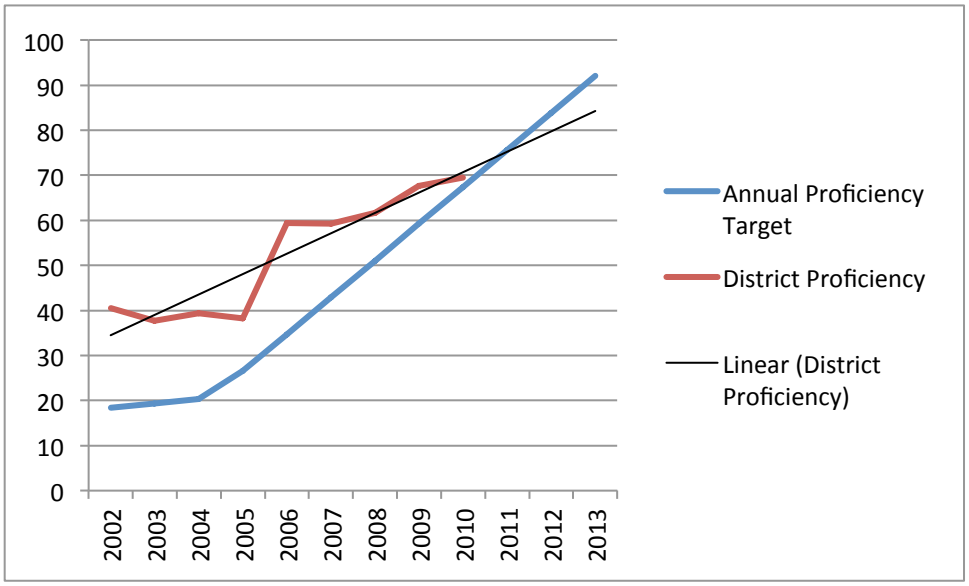

Figure 1. District communication arts scores as reported by NAEP Report from 2002 to 2010 compared to projected growth to meet the district literacy achievement goals by 2014. Linear projections of district proficiency derived from actual district proficiency reports.

Because the projected linear district proficiency did not meet the CSIP goal, district administrators and teachers explored other effective evidence-based instructional methods. One method explored was explicit word study instruction as described in the

book *Words Their Way* (Bear, Invernizzi, Templeton, & Johnston, 2012). In this book, the authors discussed in detail the five levels of orthographic development as connected to student spelling ability based on the work of Charles Read and Edmund Henderson (as cited in Bear et al., 2012). According to Bear and colleagues (2012), orthographic development "research describe[d] students' growing knowledge of words as a continuum or a series of chronologically ordered stages or phases of 'word knowledge'" (p. 9).

Juel (1988) found many educators and parents attributed reading success or failure to spelling. Traditionally, students memorized a list of words for a Friday spelling test. While educators recognize this as common practice, it does not translate into what some educators consider as best practice (Bear et al., 2012; Ganske, 2008). Research demonstrated that word knowledge was not gained through memorization; rather it was gained through manipulation and exploration of the language (Bear et al., 2012; Benjamin & Crow, 2010). Explicit word study instruction focusing on students' levels of orthographic development, one component of a comprehensive literacy program, helped students visually discriminate between word parts and words, and allowed them to add to their literacy knowledge (Bear et al., 2012; Scammacca et al., 2007). Meeting students at their developmental level and moving them forward through explicit word study instruction, furthered students' understanding of the logic of spelling (Gentry, 2004).

Statement of the Problem

Read's pioneer study in 1971 introduced the age of invented spelling (Harris & Hodges, 1995; Richgels, 2001). Read proposed that preschoolers, without formal literacy instruction, invented spellings with an underlying system and developed rules they

followed consistently (Read, 1986). Building on Read's work, Edmund Henderson (1981) and his team of associates applied Read's ideas in other grade levels, which eventually led to the creation of orthographic developmental spelling levels: emergent, letter name-alphabetic, within word pattern, syllables and affixes, and derivational relations. Research determined as children progress through these levels, their word knowledge increases (Bear et al., 2012). With increased word knowledge, learners use new patterns and strategies to systematically examine and categorize words. Proficiency with these skills helps students to "demonstrate understanding of word relationships and nuances in word meanings" (Council of Chief State School Officers & National Governors Association, 2011b, p. 51). This expectation is one of the elements of an anchor standard for language in the ELA Common Core State Standards.

Because a systematic approach utilizing explicit word study instruction helps increase word knowledge, teachers who use this approach foster students' word knowledge growth (Bear et al., 2012). Previous research explored the effectiveness of explicit word study instruction in primary grades (Bear & Barone, 1989; Beers & Henderson, 1977; Ehri & Wilce, 1987; Read, 1986); however, few studies have looked at the impact of explicit word study instruction on students' literacy achievement in fourth grade classrooms, thus warranting further investigation (Ganske, 2008; Tankersley, 2005).

Purpose Statement

The present study compared the literacy achievement of students in twelve fourth grade classrooms. Students in six classrooms received instruction at the appropriate level of orthographic development using explicit word study instruction, while students in six

other fourth grade classrooms received instruction following the district's adopted basal spelling curriculum. The purpose of the present study was to determine if explicit word study instruction significantly influenced growth in word knowledge, reading comprehension, and oral reading fluency, as well as increased proficiency in everyday spelling accuracy, as compared to instruction following the district's adopted basal spelling curriculum.

Significance of the Study

While a number of studies have examined relationships between explicit word study instruction and reading comprehension and explicit word study instruction and oral reading fluency in primary grades (Bear & Barone, 1989; Ehri & Wilce, 1987; Juel, C., Griffith, P., & Gough, P., 1986; Read, 1971; Tremain, 1993), few have focused on the impact of explicit word study instruction on word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy, in intermediate grades (Ganske, 2008; Tankersley, 2005). Studies cited above, conducted in primary grades, were completed more than a decade ago. The present study adds to the body of current knowledge regarding the relationship between explicit word study instruction and word knowledge, reading comprehension, and oral reading fluency, as well as everyday spelling accuracy. Teachers within the target district, as well as other intermediate grade teachers, may find the outcomes helpful when choosing effective methods for teaching spelling while increasing students' achievement in word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy.

Delimitations

Boundaries or delimitations must be identified to mark the limits with which the study was conducted (Lunenberg & Irby, 2008). The researcher utilized purposive

sampling to select the present study's participants (Lunenburg & Irby, 2008). Fourth grade was chosen because it is a pivotal year in today's current public education system. Through No Child Left Behind (NCLB), programs in grades one through three have received substantial government funding to address literacy needs for younger children, while fourth through twelfth grades have had few federal programs to address students' missing literacy skills (Christenbury, Bomer, & Smagorinsky, 2009). Therefore, intermediate students lacking in reading and writing skills have had fewer and fewer opportunities to reduce their learning gap. For the purpose of the present study, the researcher placed a focus on fourth grade students learning about polysyllabic words, words with more than one syllable. Since these students were expected to be proficient on state reading assessments, focusing on their achievement was relevant.

Four separate schools were chosen based on their free or reduced lunch status, students' race or ethnicity, and the school's location within the district. All students receiving the intervention, instruction utilizing an explicit word study approach, attended the same two schools. Students receiving instruction based on the district's adopted basal spelling curriculum attended two different schools. This reduced the possibility of the phenomenon referred to as "teacher talk" and the sharing of ideas. Keller (1999) determined "teacher talk" occurred when colleagues gathered within common areas, discussed general instructional strategies, and looked for ways to improve teaching. As teachers congregated, they voiced their educational perspectives regarding educational practice, based heavily on personal experience, not educational logic and theory (Hargreaves, 1984). The researcher selected twelve classrooms in four different schools to keep discussions between test group and control group teachers at a minimum.

Teachers utilizing explicit word study instruction might have influenced instruction in the control group classrooms if they had been given the opportunity to visit with one another in the school environment.

Assumptions

Assumptions were made by the researcher to help create research questions and later, to help interpret data (Lunenberg & Irby, 2008). Assumptions are factors the researcher did not have control over and assumed must be true. In the present study, the following assumptions were made: **(**a) all assessments were administered following the correct protocol, (b) all assessments were scored accurately, (c) students in the test group were identified at the correct orthographic developmental level and received explicit word study instruction at that level, (d) students in the control group received instruction following the district's adopted basal spelling curriculum, (e) teachers of the test group students exhibited fidelity by adhering to the components of explicit word study instruction as outlined in *Words Their Way* (Bear et al., 2012), and (f) teachers of the control group students exhibited fidelity by adhering to the components of the district's adopted basal spelling curriculum.

Research Questions

The research questions that guided the present study were:

Research Question 1 (RQ1): To what extent was there a difference in growth from the pretest to the posttest on the *Words Their Way* Elementary Spelling Inventory (Bear et al., 2012) between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? The growth score was calculated by subtracting the pretest score from the posttest score.

Research Question 2 (RQ2): To what extent was there a difference in growth from the pretest to the posttest on the Acuity Predictive Benchmark Assessment between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? The growth score was calculated by subtracting the pretest (Acuity Predictive Benchmark A) score from the posttest (Acuity Predictive Benchmark C) score.

Research Question 3 (RQ3): To what extent was there a difference in growth from the pretest to the posttest on the STAR Estimated Oral Reading Fluency (ORF) rating between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? The growth score was calculated by subtracting the pretest score from the posttest score.

Research Question 4 (RQ4): To what extent was there a difference in growth from the pretest to the posttest on the timed writing sample between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? The growth score was calculated by subtracting the pretest score from the posttest score.

Definition of Terms

Often, educational professionals develop terms that are specific to their pedagogy. Therefore, the following list of terms and corresponding definitions provides readers outside the field of education assistance in understanding the words in context of the present study (Creswell, 2009).

Acuity Predictive Benchmark Assessment. Acuity Predictive Benchmark Assessments, comprised of grade level state specific content and formatted similar to the

state's NCLB test, measure growth and progress toward end-of-year goals (CTB/McGraw-Hill Companies, 2010).

Basal reader. A basal reader is an assortment of student texts and workbooks and teacher support manuals used to provide instruction in developmental reading and occasionally writing in elementary and middle school grades (Harris & Hodges, 1995).

Comprehension. Comprehension is the ability readers have to make intentional meaning of the intended message in written or oral communication (Harris & Hodges, 1995).

Decoding. Decoding allows readers to analyze symbols from a familiar language, either spoken or written, to derive intended meaning (Harris & Hodges, 1995).

Developmentally appropriate orthographic instruction. Developmentally appropriate orthographic instruction uses results based on a spelling inventory assessment to determine students' spelling instruction as described in the five developmental levels: emergent, letter name-alphabetic, within word pattern, syllables and affixes, and derivational relations (Bear, et al., 2012).

Fluency. Fluency is the ability to read words with accuracy and speed while comprehending text efficiently (Renaissance Learning, 2010).

Invented spelling. Invented spelling is the result of a writer's attempt to spell a word when the correct spelling is not known; this is determined by the student's knowledge of the English spelling system, (Harris & Hodges, 1995).

Orthography. Orthography is the study of symbols in written language and how they were used (Harris & Hodges, 1995).

Spelling inventory. A spelling inventory is a list of words, with increasing difficulty, created to represent a variety of spelling features and patterns used to assess students' levels of spelling development (Bear, et al., 2012).

Word sorts. Word sorts are vocabulary-development tasks and word-study activities that require grouping similar words into categories as determined by their sound, pattern, or meaning (Harris & Hodges, 1995).

Zone of Proximal Development (ZPD). Lev Vygotsky (1978), a Russian psychologist, coined the term Zone of Proximal Development, which refers to the optimal level of difficulty for maximizing student learning time. Testing students individually and finding the span between the level at which a student can solve a problem independently and the level of potential development at which the student had guidance from adults or peers to problem solve could determine the ZPD.

Overview of Methodology

The purpose of the present study was to determine the effects of explicit word study instruction on fourth grade achievement scores in reading comprehension, oral reading fluency, and everyday spelling accuracy. A quasi-experimental, pretest and posttest control group design (Lunenberg & Irby, 2008) involved the use of a purposive sample (Creswell, 2009) of twelve fourth grade classrooms for a seven and a half month period in a suburban school district. Six preselected classrooms served as the test group, while the remaining six classrooms served as the control group. The researcher administered the Elementary Spelling Inventory (ESI) to all students as a pretest (see Appendix B). Using the feature scoring guide, as provided by *Words Their Way* (Bear et al., 2012), the test group teachers and the researcher scored the ESI pretests (see

Appendix B). The test group teachers used the results derived from the ESI pretest to determine each student's level of orthographic development. The level of development determined the type of word study instruction each child would receive. The control group students took the ESI pretest, but the teachers did not use results to determine students' level of orthographic development or students' spelling instruction. Control group students received the district's adopted basal spelling curriculum. Students in the test group and control group took the ESI as a posttest measure at the end of the data collection period. The Acuity Predictive Benchmark Assessment was used as a pretest and posttest measure to determine scaled score growth in reading comprehension. The STAR Reading Assessment was used as a pretest and posttest measure to determine growth in oral reading fluency. In order to demonstrate the transfer of knowledge from instruction to everyday spelling accuracy, students responded to a timed writing prompt, and the researcher calculated the percentage of words spelled correctly. An independent samples *t* test compared the average growth of students' orthographic knowledge based on pretest and posttest scores received from the ESI. In addition, independent samples *t* tests were conducted to compare the average growth of students' reading comprehension and oral reading fluency according to pretest and posttest Acuity Predictive Benchmark communication arts scores and pretest and posttest ORF ratings respectively. Finally, an independent samples *t* test was conducted to compare percentages of correctly spelled words in students' pretest and posttest writing samples.

Summary of the Study

Chapter one introduced this research exploring the effect of word study instruction on the achievement of fourth grade students in the areas of word knowledge,

reading comprehension, oral reading fluency, and everyday spelling accuracy. Information provided included the following: the statement of the problem, the purpose statement, the significance of the study, the delimitations, the assumptions, the research questions, the definition of terms, and the overview of methodology. Chapter two provides an overview of Constructivism, orthography research, and studies regarding the relationships between word study and student achievement in reading comprehension, oral reading fluency, and written language. Chapter three provides a detailed view of the methodology used including the sample, the evaluation instruments, and the data collection process the researcher used to answer the research questions. This includes the participants involved, the instruments used for evaluation, the data collection, and the analysis process. Chapter four explains the results of the present study. Finally, chapter five summarizes the present study and discusses the findings in relation to the body of literature. In addition, the researcher provides implications for the educational field, while making recommendations for future study.

Chapter Two

Review of Literature

Constructivist theory and its influence on classroom instruction are directly linked to the tenets of explicit word study instruction. Constructivists believe that a learner builds understanding of new concepts through repeated exposure and through interpersonal interactions. Lev Vygotsky, a Russian psychologist who focused on the way in which children learn, based his studies on the constructivist school of thought. He addressed the relationship between learning and development and called it the Zone of Proximal Development (ZPD) (as cited in Del Rio & Alvarez, 2007). Vygotsky (1987) suggested that a child's ZPD was the optimal level for learning and the assimilation of new knowledge. When incorporated into classroom instructional practice, teachers use information about children's orthographic and spelling knowledge to teach at the students' correct developmental level, their ZPD, in order to increase their understanding of the English spelling system. Through explicit word study instruction, an analysis of phonics, spelling, and vocabulary based on children's orthographic and spelling knowledge (Bear, Invernizzi, Templeton, and Johnston, 2012; Ganske, 2000, 2008), teachers can help students increase their literacy skills. Vygotsky's work, along with that of Charles Read who studied orthography in the early 1970s, provided the groundwork for other developmental theories pertinent to the present study. In this chapter, the first section reviews how Vygotsky's work relates to the constructivist theory. The next section reviews research on orthography and orthographic development, including that of Charles Read. Additional sections focus on research, which explored reading and

writing, two areas with foundations connected to orthography. The final section summarizes the impact of explicit word study instruction on literacy development.

Constructivist Theory

Social interaction and collaboration are a basic premise of Constructivism (Tracey & Morrow, 2006). Lev Vygotsky, a Russian psychologist, based his studies of guided discovery on the constructivist school of thought (as cited in Karpov, 2003). As a result, Vygotsky developed a foundational framework that embodied four principles. First, he believes students build knowledge. Second, development works in concert with social interaction and cannot be separated. Third, learning leads to development. Finally, language process plays an integral role in mental development, (Del Rio & Alvarez, 2007). The following sections address these principles of Constructivism in greater depth.

Build knowledge. Throughout time, teachers who believed they were pitchers full of knowledge and students were containers that must be filled have operated on a non-constructivist foundation. Often, these teachers failed to weave the experiences and prior knowledge students brought with them into instructional activities (Tracey & Morrow, 2006). On the other hand, Hoover (1996) stated Constructivists believe learners construct knowledge on a foundation of previous learning. Stanovich (1994) noted the first principle of Constructivism refers to the way people comprehend and make sense of the world around them through active participation in the learning process. A teacher subscribing to Constructivism operates using seven basic principles: (a) A learner forms knowledge and beliefs from within; (b) Learners personally infuse meaning into experiences; (c) Classroom learning activities lend themselves to learners gaining access

to prior knowledge of experiences, concepts, and beliefs; (d) Learning is a shared activity and is enriched with inquiry; (e) Metacognition and reflection are essential components when building knowledge and meaning; (f) Learners are an integral part of assessment; and (g) Learning outcomes vary and are unpredictable (Walker & Lambert, 1995). According to Walker and Lambert (1995) as teachers operated within these seven principles, they viewed learning as a process rather than the acquisition of isolated facts and information passed from one person to the next.

With the construction of knowledge, Dixon-Krauss (1996) found learners relied on the belief that they brought experience and information with them. This background knowledge, or schema, was dependent on learners' experiences, education, and beliefs. As learners interacted with new information, it was assimilated and attached to the existing schema (Dixon-Krauss, 1996). According to Vygotsky, a teacher allowed students to discover meaning and to increase understanding by providing learning activities, which fostered shared inquiry (as cited in Zinchenko, 2007). Through inquiry, researchers believed, students interpreted and assigned new meaning based on prior experiences, which allowed for various interpretations and constructs to reshape prior knowledge in significant ways (Dixon-Krauss, 1996; Walker & Lambert, 1995).

Just as students brought a multitude of experiences to the learning process, they took away a variety of understandings. Therefore, it was asserted that students have involvement in assessment and reflection on their learning (Walker & Lambert, 1995). Through reflection, students' learning became explicit and provided insight for the teacher regarding how students viewed their own knowledge development

(Walker & Lambert, 1995). Schon (1983) found that such self-reflection aided in continued growth over time and allowed for adaptation if necessary.

Social interaction. Students were able to build knowledge through social interaction. This second principle of Constructivism outlined by Vygotsky suggested that cognitive construction must be socially mediated (as cited in Del Rio & Alvarez, 2007). The teacher acted as a facilitator by proposing an array of ideas and concepts, while the student built a mental model of the ideas or concepts (Bodrova & Leong, 2007). When using acquired mental tools and processes, "people actually changed the way they attend, remember, and think" (Bodrova & Leong, 2007, p. 4). Through this increased use of mental ability, Vygotsky (as cited in Bodrova & Leong, 2007) suggested children's attention should focus on memory and problem-solving skills, with increased levels of active participation.

Active participation required students to construct meaning, rather than be passive participants. In addition, teachers facilitated learning through explicit teaching using social interaction and collaboration (Dixon-Krauss, 1996, p. 20; Walker & Lambert, 1995). During peer interaction, a more knowledgeable child was paired with a less knowledgeable one in order for collaboration and the examination of a particular concept. Vygotsky suggested that peer collaboration was highly effective and encouraged cognitive development (as cited in Tudge, 1990). When peers collaborated, the teacher took the role of catalyst and encouraged student interaction. No longer were teachers there to enlighten; rather they were present to provide learning opportunities students deemed relevant and to provide guidance during the learning process through a constructivist model of instruction (Hoover, 1996).

Learning leads development. Gavelek and Raphael (1996) stated that when teachers used a model such as the Vygotsky Space, student engagement increased and opportunities to learn were prevalent. When providing instruction based on this Constructivist model, a teacher became a support, rather than a giver of knowledge. Students operated in four quadrants that intersected private and public learning with individual and social interaction (see Figure 3). For example, when a student operated in quadrant one, the teacher provided explicit instruction by modeling strategies or techniques. Continuing with interpersonal interaction, students moved to quadrant two, where they had the opportunity for application of their learning. This form of peer collaboration helped students acquire mental tools (Bodrova & Leong, 2007; Dixon-Krauss, 1996). The intrinsic use of the mental tool became evident as students worked in quadrant three. Intrapersonal in nature, work in this quadrant allowed students to demonstrate application in a useful and meaningful way that suited their purposes. Finally, in quadrant four, students' transformation in learning became public as they published through writing or shared through group discussions. Through this process, the acquisition of mental tools helped students to become self-directed learners. Because relationships between learning and development differed from student to student, teachers monitored and adjusted instruction to meet the learning and teaching process needs of each individual (Bodrova & Leong, 2007; Gallimore & Tharp, 1990; Walker & Lambert, 1995).

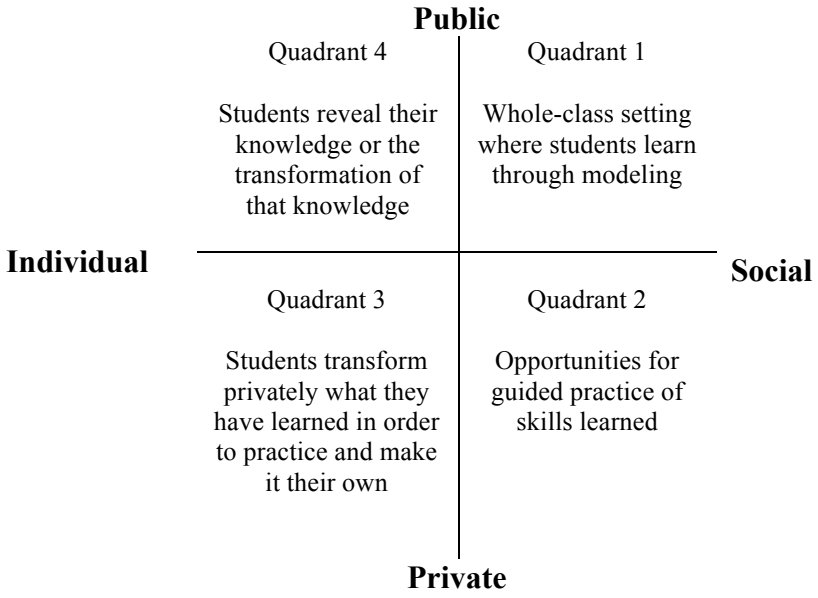

Figure 2. Vygotsky Space model taken from "Changing Talk About Texts: New Roles for Teachers and Students," J. R. Gavelek and T. E. Raphael, 1996, *Language Arts, 73*(3), pg. 182-192. Copyright 1996 by the National Council of Teachers of English.

Research results demonstrated instructional adjustment was contingent on a student's reaction to material. As the teacher provided support through social interaction and collaboration, awareness was developed and understanding increased. However, flexibility was key. Based on students' feedback, a teacher was able to provide more or fewer prompts to increase competency. Prompts included, but were not limited to hints, clues, and redirection; teachers may have also rephrased questions, provided demonstrations, and manipulated the environment (Bodrova & Leong, 2007; Dixon-Krauss, 1996). Through this scaffolding, a teacher enabled the student to use mental tools creatively and independently, which fostered a sense of independence (Bodrova & Leong, 2007).

Vygotsky studied the relationship between learning and development and created the Zone of Proximal Development (ZPD). He considered children's ZPD the area in

which they were able to perform a task or demonstrate skills and behaviors with assistance. Vygotsky referred to this as a zone, rather than a pinpoint of a child's developmental level on a scale, because a zone was more of a range. The zone in which a child's actual development existed was assessed by independent problem solving and then compared to the level at which potential development can occur as assessed by problem solving with an adult or through peer collaboration (Gallimore & Tharp, 1990). According to Gallimore and Tharp (1990) a child's ZPD was fluid; as new skills and behaviors were assimilated and a child developed, the range shifted resulting in a different level of assistance required during the performance of tasks. As the zone moved, the level of complexity in which a child learned new skills and concepts increased. In return, the accumulation of knowledge enabled students to become more deliberate in their thinking, which reflected in development (Bodrova & Leong, 2007). This was the relationship between learning and development as described by Vygotsky (as cited in Gallimore & Tharp, 1990).

Vygotsky (1987) suggested that a student must be engaged in developmentally appropriate practice. To be most effective, instruction targeted a higher range than a child's ZPD (Vygotsky, 1987). Exposure to skills, concepts, and behaviors slightly beyond those performed independently, fostered development. Students practiced skills, concepts, and behaviors that were learned and were intrinsic, but explicit teaching occurred at a level where the teacher or peer knew more and provided support (Vygotsky, 1987).

When employed in the classroom, Bodrova and Leong (2007) found Vygotsky's ZPD theory enhanced the relationship between teaching and learning. First, teachers

assisted students with tasks, with skills, or with concepts at a level through which they learned and increased developmentally. A second enhancement to the instructional practice when using ZPD was assessment. Often, standardized assessments determined what children could do independently but did not provide the information necessary to move students along developmentally. When instruction occurred within the students' ZPD, assessment happened within the range of development and learning. Consequently, teachers obtained information about what a child could do with help and how, when given prompts, the child used the prompts to perform a given task (Bodrova & Leong, 2007). Assessment enabled teachers to determine if instruction was developmentally appropriate, which was essential for productive teaching. Children asked to perform tasks beyond their ZPD experienced frustration because they were not ready to learn the required material. Likewise, children asked to perform tasks they could do independently reaped no educational benefit (Vygotsky, 1987).

Language process. Language, a mental process described by Vygotsky, provided learners with the ability to categorize symbols and concepts, allowing them to think abstractly about ideas (Bodrova & Leong, 2007). Language was a cultural tool, created and shared by members of a culture. According to Vygotsky (1978) language was the vehicle through which other mental tools, such as number systems and a variety of other signs and symbols, were acquired and could extend a person's mental capacity in regard to communication and thinking. After the acquisition of language, a mental tool, children no longer required concrete objects to elicit thought. Language allowed the child to extract memories and think about concepts or ideas abstractly (Bodrova & Leong, 2007). One tool used in the development of language was classification. Dixon-

Krauss (1996) found this strategy increased vocabulary by encouraging the learner to reorganize existing schema into categories and add new concepts, ideas, and information accordingly. Classification placed concepts in a systematically structured body of knowledge, allowing for retrieval and deliberate control of students' thinking (Dixon-Krauss, 1996).

Researchers found the mastery of mental tools had a long-term impact on a learner. Tools influenced the level of abstract thinking. Once assimilated, the tools became intrapersonal in nature and external reminders were no longer needed. Learners called upon these mental tools at will and applied them deliberately. Mental tools increased student empowerment and independence. Students controlled their behavior and reached higher achievement levels (Bodrova & Leong, 2007). Bodrova and Leong (2007) suggested that without mental tools, learners were relegated to using memorization and recitation for conceptual understanding.

Orthographic Research

Using a Constructivists' approach, researchers developed an understanding of how children acquired knowledge of the orthographic features found in the English language. Charles Read's 1971 study was instrumental in laying the foundation for future orthographic research and viewed spelling acquisition as a set of orthographic developmental stages. Read explained that children used a non-random, abstract system to group sounds based on phonetics; this allowed them to use existing phonological knowledge to spell words (as cited in Stahl, 2001). Read (1975) outlined that children typically recognized letters and their names by age two. Following this realization, children began to recognize phones, individual speech sounds, in letter names and applied

this rule to spelling words. Through auditory recognition, phonemic awareness, and a conscious attention to phonemes, children discriminated between letter sounds and consciously selected which symbols to use when representing letters. This phenomenon led Read (1971) to coin the term invented spelling.

Work of Charles Read: Early orthographic research. Both conventional spelling and unconventional, or invented, spelling encompassed the abstract and ignored some sounds, while encoding others (Stahl, 2001). Read (1975) suggested that invented spelling, although not a conventional spelling system, did have its own set of developmental expectations. He demonstrated that inventive spellers grouped sounds differently than the way sounds are found in Standard English. For example, the word *WEEK* may be represented by WYC. This particular example demonstrated the various uses of the letter /y/, many of which are nonstandard. Read (1975) further stated it was important that inventive spellers capitalized on phonemic awareness. While Stahl (2001) suggested students who made analytical judgments regarding phonological categorization developed a conceptual understanding of the English language.

Rasinski and Padak (2008) found that in early literacy development, young readers began to develop hypotheses about the orthography of the English language. Through trial and error, readers defined concepts and applied them to their reading and writing. As they continued making sense of written language, readers thought about how letters and combinations of letters represented sounds in the language. Through invented spelling, a child played with the language while developing phonemic relationships. As noted in the previous section, Read's work in 1971 provided research indicating that students' spelling errors were predictable and emerged as patterns over time. Read's

research provided the groundwork for future studies that illustrated children's spelling ability was developmental in nature. Read (1971) remarked that spelling could not arbitrarily be related to speech and memorized, rather children relied on their phonological judgments and were encouraged to build on them. Implications of Read's work allowed for further research, which examined orthographic development as a sequence of stages (Bear et al., 2012). The ways in which Henderson built upon Read's work are summarized in the remainder of this section.

Work of Edmund Henderson: Developmental orthographic stages. Henderson and subsequent researchers examined Charles Read's 1971 study and concentrated specifically on spelling errors identified. Furthermore, Henderson and Beers (1980) found children asked questions regarding letters and recognized consonant sounds at the beginning of words after studying a first grade classroom over a six-month time span. Additionally, as reading began to develop with familiar words, so did spelling. A positive correlation was seen between vowel patterns and spelling principles that became evident under the strict orthographic conditions set forth by Henderson and Beers (1980). Based on Read's findings, Henderson (1981) categorized spelling errors and determined children began to learn about words prior to formal schooling.

Subsequent research described orthographic acquisition as a progression through a series of stages (Henderson & Beers, 1980). Developmental in nature, Henderson's (1981) model appeared to follow a sequence of skill development. As children became more familiar with English orthography, they relied less on sound and more on pattern-like strategies; this allowed them to incorporate visual cues with sound cues. It was further suggested that as children moved through these stages the meaning of the words

influenced their spelling (Bear, Truex, & Barone, 1989; Templeton, 1983). Henderson and Templeton (1986) described a progressive developmental spelling model that began with preschool children and followed a student into adulthood. Students progressed through these stages at different times as they developed in their orthographic understanding of three basic "ordering" principles of English spelling (Henderson & Templeton, 1986, p. 306). Principle one, the alphabetic principle, illustrated that in the English language letters match sounds. For example, the digraph GH was pronounced in multiple ways as in the words *GHOST* and *ROUGH*. It was not until students understood the second principle, the within-word pattern principle, that the placement of the digraph and the surrounding letters determined the sound it made. For instance, when GH was found at the beginning of a word, it was pronounced as hard /g/. However, when GH was found at the end of a word, the digraph was pronounced as the sound /f/. Finally, the third principle, the meaning principle, related to the relevancy of root words and base words that have similar meanings to other words or parts of words, which were usually spelled the same. For example, the root word *DISCUSS* was spelled with two of the letter /s/ and the spelling could be transferred when spelling a form of the word, such as *DISCUSSION*. The three principles, alphabetic, within-word pattern, and meaning, provided the underpinnings for the five developmental spelling stages (Henderson & Templeton, 1986).

According to Henderson and Templeton (1986), during the first developmental stage, Pre-Alphabetic, children have not developed an understanding of the alphabetic principle. A sample of pre-alphabetic spelling resembled a string of random letters, such as SRNGTSHLMN, which indicated that a child understood the function of print. Not

until stage two, Letter Name Alphabetic, was it observed that students began to match sounds to letters. In this stage students began formal reading instruction, which increased their sight word vocabulary. As sight word vocabulary increased students started to understand how the English orthographic system represented speech. For example, words such as *WINTER* and *KICKED* were spelled like WETR and KEKT, respectively. These spellings typified the invented spellings of children operating at the Letter Name Alphabetic stage because students did not have a grasp of the phonetic relationships needed to represent vowels, which made consonants easier to hear and recognize. Henderson and Templeton (1986) suggested that at this stage, students were ready for a formal spelling program and should begin to examine groupings of words with similar characteristics.

A transition to stage three, Within-Word Pattern, signaled an understanding of the second ordering principle. Students moved beyond auditory sounds and demonstrated knowledge of letter placement (Henderson & Templeton, 1986). According to Zutell (1979), students in this stage attended to sounds and patterns. Words such as *CREAM* and *LETTER*, were represented with the following letter combinations: CREME and LETER, respectively. These spellings illustrated those of children operating at the Within-Word Pattern stage because phonetic relationships had developed and allowed a basic understanding of the vowel sound and its placement. Students in stage three began to study long vowel patterns, which provided a foundation for spelling polysyllabic words. As understanding increased, students began to experiment with the final ordering principle, meaning.

During stage four, Syllable Juncture, spelling errors represented a misunderstanding of how syllables were joined. With a strong understanding of the sound-pattern relationship in single-syllable words, students began to explore the patterns and structures inherent to multi-syllabic words. Bear and Templeton, (1998) suggested that students would not only need to build a conceptual understanding of the doubling principle, but they would also contend with syllable stress and accent. For example, students had difficulty spelling words such as *MATING* and *MATTING*. At this stage, students must master long and short vowel patterns; this understanding allowed students to know if doubling a consonant was necessary when adding a suffix (Henderson & Templeton, 1986). It was also in stage four that students created a conceptual understanding of affixes and their meanings. As this knowledge was acquired, students began to comprehend how affixes attach to other word parts. This new understanding of morphology enabled students to place a greater focus on the meaning of prefixes and suffixes over their sounds.

The conceptual knowledge gained in stage four prepared students to understand that words with related meanings tended to be spelled in similar ways (Templeton, 1991). According to Templeton (1991), this was a key characteristic of stage five, Derivational Constancy Relationships. While operating in stage five, students attended to the meaning of words and examined base or root words; this attention to the root words enabled students to be cognizant of similar spellings (Bear & Templeton, 1998). As students explored base or root words, four rules were developed. First, students formed an understanding of the silent/sounded consonant in similar words, such as the silent /g/ in *SIGN*. Second, students examined alternations. These alternations existed in vowel

relationships between accented syllables and schwas and consonant alternations between pronunciation and spelling (Henderson & Templeton, 1986). For example, Henderson and Templeton (1986) illustrated this relationship with the words *LOCAL* and *LOCALITY* and *IMAGE* and *IMAGINE*. In *LOCAL* and *IMAGE*, the short vowel /a/ was not clearly heard, but was pronounced as a schwa. However, in *LOCALITY* and *IMAGINE*, the short vowel /a/ was pronounced plainly. Knowing the alternations helped students form a foundation for the study of Greek and Latin roots that were prevalent in the English language. During this final stage of orthographic development students established a competence, as well as an appreciation, for the root or base words as individual units of meaning just as affixes were developed in stage four. Students continued to explore the English language for new patterns and meanings in stage five, as this stage was not marked by a concluding principle or skill (Henderson and Templeton, 1986).

According to Henderson (1981), as conceptual understanding developed, students attended to and represented varying features of words through their spelling during the developmental stages. By analyzing what students were using, but confusing, a teacher provided explicit instruction at the correct developmental level (Bear et al., 2012; Gentry, 2004; Henderson, 1981). Such instruction fell into what Vygotsky referred to as the students' Zone of Proximal Development (ZPD) (as cited in Geist & Lompscher, 2003). Instruction within this zone gave students the benefit of learning concepts that were slightly beyond their independent capability and fostered maximum growth (as cited in Geist & Lompscher, 2003). For example, when students wrote STOPED for the word *STOPPED*, they had "[used, but confused] the conventions for preserving vowel sounds when adding inflectional endings," (Bear et al., 2012, pp. 13). Bear and his colleagues

(2012) determined that assessment of students' spelling allowed teachers to provide instructional lessons at the appropriate ZPD level, not only in spelling, but also in phonics and vocabulary. This assessment provided a firm foundation for future growth.

Work of Donald Bear and colleagues: Classroom applications of developmental orthographic stages. To facilitate teachers' instructional lessons, Bear et al. (2012) applied Henderson's (1981) spelling categories and developed a spelling inventory tool. The types of spelling errors a student demonstrated on the inventory determined stage development, and therefore, marked transitions between stages. Using these errors, a teacher designed developmentally appropriate lessons that enabled explicit word study instruction.

According to Bear and colleagues (2012), children typically functioned at the first stage of development, the Emergent Stage, from pre-kindergarten to the middle of first grade. Much like Henderson's first stage, Pre-Alphabetic, spellers in this stage had most likely not received formal reading instruction. The spellings were often random markings on a page that had little or no sound-letter relationship. An example looked like scribbles, drawings, or random letters such as JMOE for *JASMINE* (Bear et al., 2012). As students developed, they moved away from one-to-one correspondence of letters to sounds to more abstract representations of letter patterns and sounds.

As students transitioned to the second stage, Letter Name-Alphabetic Spelling, they learned that "letters represent[ed] sounds in a systematic way, and words [could] be segmented into sequences of sound from left to right" (Bear et al., 2012, p. 11). This alphabetic principle provided an underpinning for future growth and conceptual understanding. During the second stage, students received formal reading instruction and

became representative of a beginning reader. Spellers in this stage relied heavily on letter names to associate with spelling. Examples of typical spellings found in the Letter Name-Alphabetic Spelling Stage primarily contained consonants. For example, *WHEN* was spelled Y or YN and *FLOAT* was spelled as FT (Bear et al., 2012). As exposure to print increased, students began to develop a greater understanding of short vowel sounds, digraphs, and consonant blends. Consequently, subsequent lessons in the Letter Name-Alphabetic stage found students spelling some high frequency words such as *WILL*, *LOVE*, *HAVE*, and *YOU* correctly; while words that required long vowel principles to be applied appeared as TIM for *TIME* or BAK for *BAKE* (Bear et al., 2012).

Spellers developed automaticity regarding letter sounds and short vowel patterns during the Letter Name-Alphabetic stage, which allowed for transition to the next developmental stage, Within Word Pattern Spelling. Bear and colleagues (2012) found this stage typically ranged from first grade to the middle of fourth grade, but was also characteristic of "low-skilled adult readers" (pg. 12). Often, as students began reading independently and successfully implemented basic phonetic features such as short vowels, consonant blends, and digraphs, they worked at a more abstract level to develop an understanding of long vowels and complex consonants (Bear et al., 2012; Ganske, 2000). High frequency words such as *HILL*, *HAD*, *THEM*, and *GIRL* were typically spelled correctly and common long vowel patterns, found in words such as *TIME* and *GAME* were used correctly as students worked through the third stage (Bear et al., 2012). Students in this stage began to work with homophones, such as *BARE* and *BEAR*, which introduced the spelling-meaning connection, and allowed for further development during the subsequent stages (Bear et al., 2012).

The fourth developmental stage described by Bear et al. (2012) was Syllables and Affixes Spelling. Typically, students in grades three through eight, as well as many adults, learned to spell words containing more than one syllable, a characteristic of this stage of development (Ganske, 2000). Ganske (2000) found as students progressed through this stage, a focus on multi-syllabic words allowed readers and writers to manipulate more difficult words as their sound-pattern relationship understanding increased. Students in the Syllables and Affixes Stage, used, but confused, the principle of consonant doubling and /e/ dropping. For example, a student spelled *STOPPED* as STOPED or *HIKING* as HIKEING, respectively. Progression through this stage prompted students to explore the meaning of affixes and how those affixes transformed root words. For example, exploration of affixes that affect root words as in DESLOYAL for *DISLOYAL* or CAREFULL for *CAREFUL* provided the foundation for the final stage (Bear et al., 2012). Students' attention was drawn to the meanings of affixes and root words as they transitioned from the Syllables and Affixes stage to the final stage of development, Derivational Relations Spelling.

Researchers found Derivational Relations Spelling was evident primarily in middle school through adulthood, although some younger students, perhaps in fourth and fifth grade, fell within this developmental stage (Bear et al., 2012; Ganske, 2000). Students who fell within the Derivational Relations Spelling stage were proficient readers and writers as they were exposed to larger amounts of print. Through inquiry, students explored words to develop a spelling-meaning connection. This connection enabled students to attune visually to the structure of words and to develop an understanding that "words related in meaning are often related in spelling as well, despite changes in sound"

(Bear et al., 2012, pg. 15). Word examination during this stage allowed students to develop an understanding of how words were derived from base words. For example, the word *COMPOSE* was visually similar to the word *COMPOSITION*. Both were derived from the same base word. However, the two words sounded different. Bear and Templeton (1998) suggested a student operating at the meaning level understood that spelling was often consistent when words share the same base word.

Using the developmental levels as a guide when planning explicit word study instruction enabled teachers to differentiate and to increase students' orthographic knowledge (Bear et al., 2012; Ganske, 2000; & Henderson &Templeton, 1986). Gentry (1982) noted the analysis of miscues was a cornerstone to explicit word study instruction. Tools such as spelling inventories, which consisted of dictated word lists that gradually became more difficult, allowed for analysis and for correct placement within the five stages of orthographic development (Bear et al., 2012; Ganske, 2000). Additionally, Bear and colleagues (2012) suggested the inventories used by teachers determined what students were using, but confusing, in their writing of the English language through examination of the students' reading and writing. This analysis allowed teachers to design lessons to follow a path of instruction organized by students' orthographic development. By providing activities within the students' Zone of Proximal Development that taught them how to examine words, students connected prior schema to new learning and built conceptual understanding of orthographic knowledge (Ganske, 2000). Ganske (2000) determined this increased orthographic knowledge enabled students to read and write with greater efficiency and accuracy.

During a study of thirty-one first graders over a time frame of five months, Sharp, Sinatra, and Reynolds (2008) investigated the relationship between spelling strategies and spelling errors. Spelling inventories were administered to determine the students' level of orthographic knowledge. The researchers found as students increased their orthographic understanding, their spelling development continued to grow, which supported the validity of developmental spelling stages. Furthermore, as students developed sophistication with orthographic knowledge, the strategies they employed became more efficient, which enabled them to develop automaticity for recalling and representing English orthography.

In another study, Abbott (2000) looked at third graders placed at the orthographic developmental stage, Within-Word. Abbot (2000) researched the effects of traditional spelling versus explicit word study instruction. Spelling instruction was delivered through a traditional method based on spelling lists from basal readers, while word study instruction used a word study curriculum based on developmental levels. Abbott's (2000) research showed greater growth in the spelling knowledge of those receiving word study instruction as compared to those who received traditional spelling instruction. Furthermore, students in the word study group had greater proficiency in the ability to explain and discuss spelling patterns.

Relationship Between Word Knowledge, Comprehension, and Oral Reading Fluency

Bear and Templeton (1998) noted how orthographic development was instrumental to reading growth and vocabulary acquisition. When children first began to read, they used lexical knowledge until they had a sufficient foundation of orthographic

knowledge that allowed them to transfer letters to sounds (Ehri, 1987; Ehri & Wilce, 1987). Morris (1982) stated reading, a language-based process, was comprised of three cuing systems: semantic, syntactic, and orthographic. An old school of thought was that spelling was a perfunctory skill writers employed for the reader's sake. However, "the careful examination of words that [was] part of formal spelling instruction [could] beneficially affect not only the efficiency and quality of students' writing experiences but of their reading experiences as well" (Templeton & Bear, in press, as cited in Templeton, 1991, p. 186).

In reading development, Rasinski and Padak (2008) determined fluency was the bridge between word analyses, a surface structure of reading, and comprehension, a deep reading structure. Focusing mainly on words and decoding kept a reader from understanding the text being read (Rasinski & Hoffman, 2003). Early readers expended more cognitive abilities on transcribing letters (graphemes) into their associated sounds (phonemes) than proficient readers (Rasinski & Padak, 2008). Through explicit word study instruction, students learned strategies that allowed them to decode words and become fluent readers. But research demonstrated fluency was more than decoding; it was a multidimensional concept that required decoding automaticity so cognitive attention was placed on comprehension, or understanding the text (Graham & Hebert, 2010; Kuhn & Stahl, 2000; Rasinski & Padak, 2008). An increase in fluency, the automaticity and prosody of reading, proved to increase comprehension (Chard, Ketterlin-Geller, Baker, Doabler, & Apichatabutra, 2009; Kuhn & Stahl, 2000; Rasinski & Hoffman, 2003). Without fluent word recognition, students struggled to comprehend text, the primary goal of reading (Cunningham, Nathan, & Raher, 2011).

Research demonstrated fluency bridged the gap between decoding and comprehension. Through explicit word study instruction readers developed understanding of the surface structure reading systems (Rasinski & Padak, 2008). This understanding provided readers the cognitive abilities needed to recognize words fluently (Keene, 2008). The National Assessment of Educational Progress (NAEP) Oral Reading Fluency Study stated that 39% of the United States' fourth graders read below minimally acceptable fluency level. The NAEP fluency scale developed for the study, determined that 105 words per minute was below proficiency (Daane, Campbell, Grigg, Goodman, & Oranje, 2005). Although this was not indicative of an oral reading fluency problem, the findings demonstrated a positive relationship between oral reading fluency and reading comprehension.

To determine variance in oral reading fluency, word accuracy, and phrasing, Zutell and Rasinski (1989) examined the reading of 72 third grade students and 60 fifth grade students located in a Mid-western metropolitan area using a quantitative study. While subjects were randomly selected, the first school represented an upper middle-class neighborhood, made up of primarily white-collar professionals. The second school characterized a lower middle-class, blue-collar neighborhood, and contained many inner-city traits. Data collection included three scoring procedures: (a) Students read a passage one level above their present assignment which guaranteed a wide variety of word accuracy and reading rate, (b) Students took a spelling test using Schlagal's Qualitative Inventory of Word Knowledge, and (c) Students were given the grade level appropriate Gates-MacGinitie Reading Test.

Results of this research conducted by Zutell and Rasinski (1989), suggested high correlation between everyday spelling accuracy and reading rate and reading accuracy. This was evident in the third grade sample group, but stronger results in the fifth grade group implied "spelling accuracy captures elements of specific and detailed word knowledge that would speed identification" (p. 151). Zutell and Rasinski (1989) recommended, based on results, a need for developmentally appropriate explicit instruction in spelling to increase fluency and comprehension. Word recognition and decoding must operate simultaneously for a reader to be fluent. Through increased word recognition, less cognitive thought processes were needed for word recall, which allowed for cognitive attention to be spent on comprehending the text (Applegate, Applegate, & Modla, 2009; Bear et al., 2012; Rasinski & Padak, 2008; Roberts, Christo, & Shefelbine, 2011).

Oral reading fluency rates increased consistently during the elementary school years; this indicated a strong relationship between reading comprehension and oral reading fluency (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Miller and Schwanenflugel (2006) found the following:

> Given that individuals have limited processing capacity, devoting cognitive resources to lower order (constrained) processes, such as decoding, leaves fewer resources available for higher order, non-automatic processes, such as comprehension. When less skilled readers are focused on decoding issues, they may not draw the appropriate connections with prior knowledge and inferences needed for understanding. (p. 840)

Researchers found possession of a firm foundation in word recognition was key to the reading process (Gough, 1984; Roberts, Christo, & Shefelbine, 2011; Stanovich, 1991); however, to create the strong foundation in fluent word recognition, a robust knowledge base of orthography was needed.

Strong oral fluency allowed a proficient reader to process the surface level of text successfully in order to construct meaning (Keene, 2008; Rasinski & Padak, 2008). MacEachron (2008) noted for beginning readers, the processing of the surface level of text, known as phonological decoding, was cumbersome and focused on translating written letters and spelling patterns into speech patterns. Readers who relied heavily on phonological decoding were immersed in the surface reading structures of the grapho-phonemic, lexical, and syntactic systems (Keene, 2008). Keene (2008) suggested that a proficient reader, with command of the surface level systems, employed deeper reading structures, such as the semantic, schematic, and pragmatic systems in order to construct meaning. Skilled readers developed automaticity in word recognition, freeing up cognitive capabilities to be directed to comprehension. Explicit word study, a key component in comprehensive literacy instruction, was necessary to move students toward becoming proficient readers (Keene & Zimmerman, 2007).

Relationship Between Word Knowledge and Writing

Study results found students' generalizations formed about words were applicable to their reading as well as their writing. Through multiple, varied exposures students began to generalize and apply spelling patterns in written language (Bear et al., 2012; Hodges, 1984). Spelling, a process of converting sound to written symbols, relied on students understanding the relationships among letters and the meanings of prefixes and

suffixes when attached to root words (Hodges, 1984). Utilizing conceptual generalization, writers were more inclined to risk using unknown words in their writing, rather than play it safe (Snowball, 1993). Having an understanding of the relationships that existed between words and how meaning affected spelling enabled students to apply the rules of written language to words. Students were more apt to attempt to use a wider range of words in their own writing as they developed an understanding of word relationships. Teachers then analyzed students' written work and determined what spelling strategies were being used, as well as those strategies students were attempting, but were confusing (Bear et al., 2012; Snowball, 1993).

In a longitudinal study, Juel (1988) explored the relationship between spelling and writing for fifty-four children attending grades one through four. The racially diverse sample came from a large neighborhood elementary school in Austin, Texas. The subjects were divided among eight different classrooms, yet all used the same leveled, basal program for reading instruction. In the first and second grades a supplemental phonics program was used to enhance the basal program. During this study, Juel (1988) examined the factors poor readers and writers lacked and those factors that kept poor readers and writers from improving. She found that growth in spelling-sound relationship was slow for poor readers who entered first grade lacking phonemic awareness. The low phonemic awareness contributed to poor writers falling short in decoding; a skill that is gained as phonemic awareness increased, and allows readers to "break the code of written text" (Juel, 1988, p. 437). Consequently, poor readers were exposed to less text than their proficient reader peers. Furthermore, she concluded the poor readers often became poor writers; although some writers had good ideas, they were

less likely to attempt using words that were difficult to spell, which decreased their level of proficiency. In her work, Snowball (1993) noted with a strong orthographic knowledge base, writers had a cache to pull from when expressing thoughts and ideas in written form. Without that foundation, writers were limited to what is easy or familiar. Through explicit word study instruction, students developed an understanding of orthography, thus increasing their independence as they explored and used written language (Snowball, 1993).

Relationship Between Word Knowledge and Orthography

According to Bear and colleagues (2012), five components must be included in a comprehensive literacy program to increase students' independent writing and reading proficiency. The "braid of literacy" (Bear et al., 2012, p. 1) included orthography, reading, oral language, stories, and writing. The weaving of the braid began as a young child listened to language and developed literacy skills as acquisition of orthography increased. Orthography, a component of the literacy braid, included word study. Templeton (1991) described through explicit word study instruction, students examined word lists to compare and categorize according to their spelling patterns. Students in a comprehensive spelling program received opportunities to increase writing and reading proficiency. By using a developmental approach, explicit orthographic instruction encouraged students to examine how words work, while incorporating authentic writing instruction (Rasinski & Padak, 2008).

As students participated in a comprehensive literacy program, they developed word knowledge and increased their understanding of orthography. This included letters and sounds, letter and syllable patterns, and the effect of meaning as it corresponded to

spelling (Bear & Templeton, 1998). A variety of research revealed children develop at their own rate in regard to orthographic knowledge (Bear et al., 2012; Bear & Barone, 1989; Ehri, 1998; Henderson, 1981; Zutell & Rasinski, 1989) and do not arrive at the same point on the developmental continuum at a precise time. Therefore, assessing students' abilities and placing them at the appropriate instructional level was critical for success. Assessment enabled written language support, and equipped teachers with the understanding of students' current levels of word knowledge, as well as the levels children traveled through during spelling development (Rasinski & Padak, 2008). Furthermore, teachers determined future classroom instruction from the data provided by the assessments.

Through assessment, students were placed at the appropriate developmental level, enabling explicit word study instruction that increased students' academic knowledge (Abbott, 2000; Bear & Templeton, 1998; Donnell, 2005; Hawkins, 2003). Neuman, Newman, and Dwyer (2011) studied a group of three and four-year-old children to determine if learning words through word study and categorization would increase orthographic knowledge and conceptual properties. Randomly chosen and assigned to test groups and control groups, children from twenty-eight Head Start classrooms were assessed on word knowledge, conceptual knowledge, categories and properties of concepts, and expressive language. The test group received the word study intervention and students were taught to categorize new words. Neuman, Newman, & Dwyer, (2011) found that when the intervention was used, students were able to improve their orthographic knowledge, as well as make inferences outside of the explicitly taught material.

Incorporating word study into daily instruction facilitated a comprehensive literacy program and helped students develop a general understanding of English. Additionally, specific word knowledge increased, helping students see the relationships between spelling and meanings of words (Bear et al., 2012). Templeton (1991) suggested students without an established orthographic knowledge base who possessed vast worldly knowledge and experiences, would still not be able to comprehend the words on a printed page. Using higher level thinking skills, such as categorization, helped students develop conceptual knowledge about words, which aided them in generalizing and making inferences (Rehder & Hastie, 2004). This was instrumental when approaching new words in text. Neuman, Newman, & Dwyer (2011) found that students who were able to make generalizations based on categorical information were able to speculate meaning of the new words.

Research findings revealed students, using inquiry, discovered spelling patterns and meanings of words. Manipulating words allowed children to develop conceptual understandings, and to apply critical thinking skills when categorizing words based on common attributes (Bear et al., 2012). As teachers strived to provide explicit word study instruction at the correct developmental level, students were encouraged to work with words that were developmentally appropriate. Through peer collaboration, students performed a word sort, or categorization task, to examine the similarities and differences that exist among words (Bear et al., 2012; Ganske, 2000, 2008; Morris, 1982). Haystead and Marzano (2009) suggested that using instructional strategies such as categorization and compare/contrast, both attributes of word study, helped teachers increase student learning. This instruction cultivated a deeper understanding of English orthography

(Snowball, 1993), lessening the pull on students' cognitive resources in the realm of decoding, and focused cognitive abilities on comprehending the text (Applegate, Applegate, & Modla, 2009).

Conclusion

This chapter addressed literature regarding the constructivist theory, early orthographic research, literacy development, and the application of explicit word study instruction. The constructivist theory was explored through the teachings of Lev Vygotsky and examined the role of teacher and learner. The literature provided an understanding of the pedagogical philosophy for a constructivist approach to education including the use of two instrumental components, peer collaboration, and instruction based on the child's Zone of Proximal Development. Next, highlights of various orthographic models and their respective researchers were presented, beginning with Charles Read, a pioneer in spelling research. The third section of this chapter provided an overview of the connection between reading and orthography, oral reading fluency and orthography, and writing and orthography. Finally, the last area reviewed pertained to explicit word study instruction. Using diagnostic tools, such as spelling inventories and student writing samples, teachers placed students at the correct orthographic development level and provided explicit word study instruction accordingly.

Chapter three provides a detailed look at the methodology used in the present study. The research design, population, and specific information regarding the sample are presented. In addition, the chapter discusses instrumentation and shares validity and reliability information for the measurement instruments used. Finally, the data collection

procedures, the data analysis and hypothesis testing process, and the limitations of the present study are described.

Chapter Three

Methods

The present study addressed four research questions pertaining to explicit word study instruction and student achievement in word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy. Chapter three begins by outlining the research design, including the population and sampling methods. Next, the instruments used to evaluate the variables of explicit word study instruction are described. Finally, data collection procedures, data analysis and hypothesis testing, and limitations are identified and discussed, and followed by a summary of the methods employed during the present study.

Research Design

The overall purpose of this research was to explore the use of explicit word study instruction in the fourth grade classroom as it affects students' literacy achievement. Using a quasi-experimental, pretest and posttest control group design (Creswell, 2009), spelling achievement in twelve fourth grade classrooms was studied for seven and a half months. To address the research questions effectively, a comparison was made between test group and control group students with similar free or reduced lunch status, race or ethnicity, and school location within the district. The test group students received explicit word study instruction based on each child's orthographic developmental level using methods described in *Words Their Way* (Bear et al., 2012). The control group students received spelling instruction as outlined in the district's adopted basal spelling curriculum, *Treasures* (MacMillan/McGraw-Hill, 2007).

Prior to data collection, the test group teachers participated in professional development modules during four collaborative work sessions (see Appendix A for complete professional development notes). Parts one through three focused on theory, assessment, and differentiation. The first training module provided the test group teachers with theoretical background knowledge supporting explicit word study instruction, as well as information regarding the developmental levels of word knowledge and the components of explicit word study instruction. Training module two focused on the assessment tool, the Elementary Spelling Inventory (ESI) (Bear et al., 2012). After watching a DVD provided in the *Words Their Way* (Bear et al., 2012) book, teachers practiced scoring a series of twenty sample ESIs. Through discussion, test group teachers achieved familiarity with the tool and collaborated to analyze the results and establish inter-rater reliability. During session three, the test group teachers received information about progressive skill development and differentiation. Finally, the fourth session provided test group teachers with information about specific components of word study instruction used by students to manipulate words and become familiar with their associated spelling patterns. Test group teachers spent a total of twelve hours attending the professional development training modules. Once training was completed, test group teachers administered the Elementary Spelling Inventory (ESI) (Bear et al., 2012) as a pretest to their students at the beginning of the 2011-2012 school year. The ESI tests were scored, and the test group teachers used the scores to determine students' level of orthographic development. Once identified, students participated in weekly, on-going small group, word study instruction. Test group teachers presented a mini-lesson focused on a developmentally appropriate spelling skill and students categorized words according

to spelling patterns. Students then practiced the skill during individual word sorts and through interactive games with peers. In each instance, students were applying a spelling rule while manipulating words and categorizing them according to spelling characteristics. Following each word study cycle, students took a traditional spelling test focused on the spelling patterns explored within the cycle.

Teachers using the district's adopted basal spelling curriculum also received professional development. The district's elementary instructional coaches provided an initial training at the time of adoption in 2007 to all elementary teachers. The four-hour session focused on the components of the basal series, the literacy framework, and spelling, specifically pre-assessment, to determine student grade level placement as above, on, or below grade level. Prior to the present study, teachers in the control group attended an additional four-hour session in order to receive further training. The session focused on using the district's adopted basal spelling curriculum with fidelity. Following the training, the control group teachers administered the Elementary Spelling Inventory (Bear et al., 2012) as a pretest to their students at the beginning of the 2011-2012 school year. Data from this test were not used to guide instruction. Over the course of the present study, the control group progressed through the district's adopted basal spelling curriculum as determined by a preset scope and sequence. Teachers used the basal spelling activities on a weekly basis. These included: worksheets, sentence writing, partner spelling practice, and word searches. Students were assessed each Monday and received a traditional spelling list of words to study. On Friday, students took a test over the list of words received earlier in the week. Test group and control group teachers

administered the Elementary Spelling Inventory (Bear et al., 2012) in March 2012 as a posttest measure to indicate students' growth in orthographic development.

To measure the impact of explicit word study instruction on students' level of reading comprehension, the Acuity Predictive Benchmark Assessment A was administered to all students in August 2011 as a pretest and the Acuity Predictive Benchmark Assessment C was administered as a posttest measure in March 2012. All students took the STAR Reading Assessment in August 2011 as a pretest measure to assess their estimated oral reading fluency (ORF). In March 2012, all students took the STAR Reading Assessment as a posttest measure to indicate their growth in estimated oral reading fluency. In addition, each child responded to a writing prompt for a set amount of time as a pretest measure in August 2011 to measure spelling accuracy in daily writing. In March 2012, students provided a second timed writing sample based on a different prompt.

An average score for the test group and the control group was calculated for each pretest and posttest measure. These average scores were used to determine a growth score in each of the four assessments: the Elementary Spelling Inventory, the Acuity Predictive Benchmark Assessment, the STAR Reading Assessment, and the timed writing sample.

Population and Sample

The population for the present study included all fourth grade students in the targeted Mid-western school district during the 2011-2012 school year. Of the 10,199 students serviced by the district, 804 attended fourth grade. Three hundred fifty-one of the district's fourth graders participated in the present study. Each fourth grade cohort

chosen for the present study attended a different school. At the time of the present study, School A, located in the district's central zone, served 534 students. School B, located in the northern zone of the district, served 516 students. School C, located in the southern zone of the district, served 538 students. Finally, School D, located in the western zone of the district, served 448 students. For the purpose of generalizability, the sample mirrored the demographics of the school district. Table 1 provides an overview of racial and ethnic data for each test group and each control group in the present study.

Table 1

Race and Ethnicity of Test Group and Control Group Students – 4th Grade

School	White	African American	Hispanic	Asian	Other
A (Test)					
n	67	8	7	3	5
(%)	(74.4)	(8.9)	(7.8)	(3.3)	(5.6)
B (Test)					
n	60	8	2	1	6
(%)	(77.9)	(10.4)	(2.6)	(1.3)	(7.8)
C (Control)					
n	69	8	8	2	8
(%)	(72.6)	(8.4)	(8.4)	(2.1)	(8.4)
D (Control)					
n	66	5	6	3	9
(%)	(74.2)	(5.6)	(6.7)	(3.4)	(10.1)

Note. Numbers reflect the number of students who started the study, however due to mobility, numbers changed as students moved in or out during the seven and a half month period (Director of Research, Assessment, and Evaluation, personal communication, October 1, 2011).

The percentage of students receiving free or reduced lunch in each school's fourth grade cohort fell within 5% of the district's overall percentage, which is 25.1% (Director of Research, Assessment, and Evaluation, personal communication, October 1, 2011). Table 2 displays these data.

Table 2

Students Receiving Free or Reduced Lunch

School	Free or Reduced Lunch	Not Receiving Free or Reduced Lunch
A (Test)		
n	27	63
(%)	(30.0)	(70.0)
B (Test)		
n	23	54
(%)	(29.9)	(70.1)
C (Control)		
n	25	70
(%)	(26.3)	(73.7)
D (Control)		
n	21	68
(%)	(23.6)	(76.4)

Note. Numbers reflect the number of students who started the study, however due to mobility, numbers changed as students moved in or out during the seven and a half month period (Director of Research, Assessment, and Evaluation, personal communication, October 1, 2011).

Sampling Procedures

The researcher utilized purposive sampling to choose study participants (Lunenberg & Irby, 2008). Easy access, prior interest in the use of explicit word study, and the scarcity of research exploring word study in the intermediate grades prompted the researcher to select fourth grade students as study participants. Also taken into

consideration was generalizability. The schools chosen mirrored the district's overall population with regard to race and ethnicity and free or reduced lunch status. Using a representative sample of students increased the extent to which the results may be generalized to the entire population and increased external validity (Fraenkel & Wallen, 2000).

Instrumentation

The Elementary Spelling Inventory (Bear et al., 2012) was used to determine students' orthographic developmental growth. The ESI consists of twenty-five words beginning with the word *bed*, representing the early stages of orthographic development, and increases in difficulty ending with *opposition,* a word reflecting the characteristics of the final stage of development. In administering the ESI, the teacher calls out the word, reads a sentence containing the word, repeats the word in isolation, and directs the students to write the word on paper. It can be administered in a number of settings: individual, small group, or whole group. The test takes approximately twenty minutes to complete.

The comprehensive computer generated formative assessments, Acuity Predictive Benchmark Assessment A and C, are published by CTB/McGraw-Hill Companies (2010). They were used to determine students' growth in reading comprehension. Acuity Predictive Benchmark Assessment A served as a pretest measure, while Acuity Predictive Benchmark Assessment C was the posttest measure. Students read fiction text passages prior to answering twenty-eight selected response questions and two performance event questions, without teacher assistance. The Predictive Benchmark Assessment A measures knowledge based on the previous year's grade-level content,

while the Predictive Benchmark Assessment C measures on-grade level content. It can be administered in a number of settings: individual, small group, or whole group. Students are not timed while completing this assessment. However, most students completed the assessment in a forty-five minute time frame.

The STAR Reading Assessment is a progress-monitoring tool used to determine students' reading skills in comprehension and fluency (Renaissance Learning, 2010). The reading scores are norm-referenced and provide data to help teachers determine the needs of their students and guide instruction. As a computer generated assessment, students' tests are individualized based on the responses provided on the previous question. This type of test structure is known as adaptive branching. Tests increase and decrease in difficulty in order to match students' performance levels (Renaissance Learning, 2010.) The students were tested using the STAR Reading Assessment to determine the number of words read correctly during one-minute passages and received an estimated oral fluency (ORF) score. The passages consist of grade-level text and represent readability levels within the range of the first half of the student's current school year as determined by the Flesch-Kincaid readability formula. It can be administered in a number of settings: individual, small group, or whole group. Most students complete the assessment in approximately twenty-minutes.

Writing samples were acquired using general prompts provided by the researcher. The prompt used for the pretest writing sample in August 2011 was: What did you do over summer break or wish you had done over summer break? The second prompt provided in March 2012 for the posttest writing sample was: What is your most treasured item or favorite memory? Each student was asked to write for five minutes. The

researcher collected and read all pretest and posttest writing samples and determined the percentage of words spelled correctly by dividing the number of words attempted in the timed writing sample by the number of words spelled correctly.

Measurement. The present study utilized the Elementary Spelling Inventory to assess the students' stages of word knowledge at the appropriate orthographic developmental level. This was a district resource readily available to teachers. Although there are three inventories in *Words Their Way* (Bear et al., 2012), the elementary version was selected as it covered all five developmental stages. Additionally, students in fourth grade typically fall toward the middle of the orthographic continuum, and the elementary ESI addressed the required developmental levels. Finally, the pretest and posttest format provided teachers and students with a familiar procedure.

In the target school district, all students in grades three through eight regularly complete Acuity Predictive Benchmark computerized assessments to assess reading comprehension. Written to mirror the NCLB state assessment, the communication arts content tested was grade level appropriate (CTB/McGraw-Hill Companies, 2010). Additionally, it was designed to measure students' academic growth and to predict year-end-goals. For example, Acuity Predictive Benchmark Assessment A, given at the beginning of the year, included content from the end of the previous year's grade level and assessed material from the current grade level. Given at the end of the year, Acuity Predictive Benchmark Assessment C measured grade level content standards (CTB/McGraw-Hill Companies, 2010). These scores were compared to determine growth and predict students' performance on the state's standardized assessment

administered in the spring. In the present study, Acuity Predictive Benchmark Assessments were utilized to specifically assess reading comprehension.

The STAR Reading Assessment, purchased from Renaissance Learning and given regularly to all elementary students in grades two through five, predicted outcomes on standardized tests taken during the month of April. The STAR Reading Assessment provided literacy information based on students' abilities and allowed teachers to track growth throughout the school year. Students took this computerized test in approximately ten minutes without teacher assistance. The STAR Reading Assessment measured reading comprehension and overall reading achievement by using test items that placed vocabulary in context. Results provided norm-referenced and scaled scores (Renaissance Learning, 2010). As one result, each student received an estimated oral reading fluency (ORF) rating. This rating provided an estimate of the students' ability to read words quickly and accurately, while comprehending the text. In the present study, the STAR Reading Assessment was utilized to specifically assess oral reading fluency.

Students in the sample write each day as part of the district's communication arts curriculum. Writing to a prompt for the purpose of data collection was not an unusual request. Students completed the writing sample in approximately five minutes. Using a pretest and posttest timed writing sample provided an authentic assessment of students' ability to apply spelling skills to written language. In the present study, the timed writing sample was utilized to specifically assess everyday spelling accuracy.

Reliability and validity. For an instrument to be reliable, it must show consistency of results from one application to the next. Additionally, a valid test measures, quite accurately, what it is intended to measure (Lunenberg & Irby, 2008).

Elementary Spelling Inventory. Sterbinsky (2007) conducted a reliability and validity analysis over the *Words Their Way* (Bear et al., 2012) spelling inventory for the Center for Research in Education Policy. He conducted his study in seven schools with 4,290 students in grades one through five. Sterbinsky (2007) administered 1,944 spelling inventories in the fall of 2005, with a second administration in the spring of 2006. Using Cronbach's Alpha, an overall reliability coefficient of .92 provided evidence for strong reliability. "For the Elementary [Spelling] Inventory, the test-retest reliability estimates for all students ranged from .931 to .974 using the Spring 2006 (second administration) as the pretest and the Spring 2006 (third administration) as the posttest" (Sterbinsky, 2007, p. 14). "The coefficients using the Fall 2005 (first administration) as the pretest were a bit lower, ranging form .700 to .898. All coefficients were significant at the $p < .01$ level" (Sterbinsky, 2007, p. 14). Table 3 includes the test-retest reliability coefficients for both the Fall 2005 and the Spring 2006 administrations and the Spring 2006 and the Spring 2006 administrations.

Table 3

Fourth Grade Test-Retest Reliability Estimates for the ESI

	All Students	Excludes Special Populations
Fall 2005 Pretest	0.898	0.873
Spring 2006 Pretest	0.943	0.927

Note. Adapted from "Words Their Way Spelling Inventories: Reliability and Validity Analyses," by A. Sterbinsky, 2007, *Center for Research in Educational Policy Report*, p. 14. Copyright 2007 by the University of Memphis.

The data indicated that the inventories provided reliable data for all students. Sterbinsky (2007) conducted criterion related validity studies using a predictive and concurrent

design. He used the Elementary Spelling Inventory administered in Fall 2005 as a predictor and the subtests of the Californian Standards Test (CST) administered in Spring 2006 as criteria (predictive validity). He also used the Elementary Spelling Inventory administered in Spring 2006 as a predictor and the subtests of the CST administered in Spring 2006 as criteria (concurrent validity). The predictive coefficients for the fourth grade sample ranged from .428 to .619 ($p < .001$). The concurrent validity coefficients for the fourth grade sample ranged from .384 to .656 ($p < .001$) (see Table 4). Sterbinsky (2007) concluded that the Elementary Spelling Inventory was a reliable instrument and a valid predictor of student achievement.

Table 4

Validity of ESI Using ELA Subtests of the CST as Criteria

Subtests	Includes all Students		Excludes Special Populations	
	Predictive Validity	Concurrent Validity	Predictive Validity	Concurrent Validity
Reading – List	0.601	0.613	0.597	0.516
WAVD[a]	0.565	0.597	0.601	0.534
Reading Comp	0.510	0.499	0.444	0.326
Lit Response/Analysis	0.468	0.586	0.464	0.499
Written Conventions	0.619	0.656	0.621	0.593
Writing Strategies	0.541	0.566	0.54	0.462
ELA Cluster 6	0.428	0.384	0.409	0.283
CST ss ELA	0.607	0.628	0.608	0.525
CST pl ELA	0.609	0.621	0.583	0.516

Note. Lunenberg & Irby (2008) state a predictive validity test measures how well individuals will perform in future situations. A concurrent validity test measures "the degree to which scores on one test correlate to scores on another test when both tests are administered at about the same time" (Lunenbery & Irby, 2008, p. 181). Adapted from "Words Their Way Spelling Inventories: Reliability and Validity Analyses," by A. Sterbinsky, 2007, *Center for Research in Educational Policy Report*, p. 18. Copyright 2007 by the University of Memphis.

[a]WAVD = Word Analysis Vocabulary Development

Acuity Predictive Benchmark Assessment A and C. CTB/McGraw-Hill Companies (2010) conducted a study using 7,734 fourth graders in Missouri to determine the reliability of the Acuity Predictive Benchmark Assessment using the Feldt-Raju reliability coefficient. According to Steinberg (2008) a correlation of 1.0 indicates a

"perfect positive relationship" (p. 401), therefore a coefficient of 0.89 was evidence of strong reliability. CTB/McGraw-Hill Companies (2010) conducted construct, content, and predictive validity tests. The company did not conduct a test to evaluate the construct validity of the fourth grade English Language Arts (ELA) Acuity Predictive Benchmark Assessment based on the fourth grade MAP ELA criteria because it paralleled the content structure of the criterion assessment (National Center on Response to Intervention, n.d.a.). The company did not conduct a content validity test to evaluate the fourth grade ELA Acuity Predictive Benchmark Assessment because content structure paralleled the criterion assessment "in terms of both alignment to standards and item format" (National Center on Response to Intervention, n.d.a., n.p.). The predictive validity test correlated the fourth grade ELA Acuity Predictive Benchmark Assessment test design with the fourth grade MAP ELA criteria using 2,160 participants. A Pearson correlation of 0.69 showed evidence of a moderately strong positive relationship between the Acuity Predictive Benchmark Assessment and the MAP Test criterion assessment (National Center on Response to Intervention, n.d.a.).

STAR Reading Assessment. A reliability study was conducted using large samples from six states: Arkansas, Delaware, Illinois, Kansas, Michigan, and Mississippi (National Center on Response to Intervention, n.d.b.). Table 5 displays correlations from the split-half and test-retest reliability tests. Lunenberg & Irby (2008) state that split-half reliability requires administering the test to group as a whole test, then splitting the test into two parts and figure each participant's score on both halves to enable correlation of the scores. Test-retest reliability refers to the degree in which test scores are consistent

over a period of time for the same instrument. All median coefficients were greater than .80 indicating strong evidence for the reliability of the STAR.

Table 5

STAR Reliability Test Results Grades 1 - 5

Type of Reliability	n	Coefficient	
		Range	*Mdn*
Split-Half	7,523 – 10, 476	0.88 – 0.89	0.89
Retest	296-300	0.82 – 0.89	0.83

Note. Adapted from National Center on Response to Intervention, n.d.b., *Screening Tools Chart*, n.p. Retrieved from http://www.rti4success.org/screeningtools

Criterion related validity was studied using large samples. Results ranged from moderate to strong coefficients indicating a valid testing instrument (National Center on Response to Intervention, n.d.b.). Table 6 displays the results of the predictive and concurrent validity analyses for the STAR Reading Assessment.

Table 6

STAR Validity Test Results

Validity	Grade	Criterion	n	Coefficient	
				Range	*Mdn*
Pred.[a]	3 - 6	SAT9	1,000+	0.81 – 0.83	0.82
Pred.[a]	3 – 6	CST	1,000+	0.78 – 0.81	0.80
Pred.[a]	2 - 6	SAT9	44 - 389	0.66 – 0.73	0.68
Con.[b]	1 - 4	DIBELS ORF	12,220	0.71 – 0.87	0.81

Note. Adapted from Adapted from National Center on Response to Intervention, n.d.b., *Screening Tools Chart*, n.p. Retrieved from http://www.rti4success.org/screeningtools.

[a]Pred.= Predictive Validity

[b]Con. = Concurrent Validity

Timed Writing Sample. The researcher based this instrument design on classroom writing procedures. The prompts used were comparable to items students wrote about during daily instruction. The subject matter addressed in each prompt was of high interest to fourth grade students. Specific content knowledge was not required, rather the prompts asked students to write about familiar experiences. Each prompt took approximately ten minutes to administer following a brief explanation. Test group and control group teachers read the prompt to the students and explained that the writing sample would be scored for the number of words spelled correctly. After hearing the prompt, students wrote for exactly five minutes. Because of the unique nature of this assessment no reliability and validity data are available.

Data Collection Procedures

Prior to beginning the present study and collecting data, a Proposal for Research (see Appendix D) was submitted on May 17, 2011 to the Baker University Institutional Review Board (IRB). This proposal outlined the present study and requested an exemption due to the anonymity of the participants. All assessments were a part of the regular school program, except for the Elementary Spelling Inventory (Bear et al., 2012). No consent was needed as spelling is a portion of daily instruction and the assessments are given as a part of the target district's assessment schedule. Scores from the Acuity Predictive Benchmark Assessments A and C and the STAR Reading Assessment are archived in a secured online repository managed by the CTB/McGraw Hill's (2010) and Renaissance Learning's (2010) websites, respectively. The scores from the ESI and the written language sample will not be part of any permanent record and were collected for the purposes of the present study. The IRB granted approval on July 13, 2011, at which time the researcher submitted an IRB Proposal and Approval request to the target district's Director of Research, Assessment, and Evaluation. The target district's IRB Proposal and Approval request was approved on July 19, 2011 stating research could begin in August 2011 (see Appendix E).

The Elementary Spelling Inventory (ESI) (Bear et al., 2012) (see Appendix B) was administered as a pretest in August 2011 and again in March 2012 as a posttest. To facilitate anonymity, test group and control group teachers used a code based on school initials and their surname initial. The classroom teacher randomly assigned student numbers at the end of the code. For example, a student code may look like TR-B-01. In this example, TR represented the school, while B stood for the teacher's initial, and 01 was the identifying marker for the student. Each teacher retained a master list in order to

match pretest and posttest scores accurately. The researcher had access to this master list as well.

All teachers administered the ESI to their respective students, in a whole group setting, according to the directions outlined in *Words Their Way* (Bear et al., 2012). All teachers received training regarding the administration of the assessment prior to the testing session. Students provided written answers on a piece of notebook paper. Immediately following the ESI, all students wrote for approximately five minutes in response to a prompt the teacher provided orally. They wrote to the prompt on the back of their ESI paper. Upon completion of the writing sample, the researcher collected all papers from control group students. The researcher scored the Elementary Spelling Inventory for the control group students according to the guidelines specified in *Words Their Way* (Bear et. al., 2012).

Test group teachers collected the papers from their students and scored the Elementary Spelling Inventory according to the guidelines specified in *Words Their Way* (Bear et. al., 2012). Training regarding the scoring of the Elementary Spelling Inventory was conducted prior to this testing session during professional development module two (see Appendix A) in order to increase scoring accuracy. After the inventories were scored, the researcher collected all student papers, scored the timed writing samples, and calculated the percentage of words spelled correctly by each student.

As a district employee, the researcher had access to archived data for both the Acuity Predictive Benchmark Assessments A and C and the STAR Reading Assessment. As web-based programs, all sets of data, Acuity Predictive Benchmark Assessment and STAR Reading Assessment, were housed in a secured online repository managed by the

CTB/McGraw Hill's (2010) and Renaissance Learning's (2010) websites, respectively. All scores, including ESIs, timed writing samples, Acuity Predictive Benchmark Assessments A and C, and STAR ORF ratings, were documented and placed in an Excel spreadsheet.

Data Analysis and Hypothesis Testing

August 2011 ESI scores were analyzed and compared to the March 2012 ESI scores to show growth. To analyze the difference, a growth score was calculated using the posttest score minus the pretest score for each student. Scores were compiled to determine an average growth score for the test group and for the control group. The researcher conducted an independent samples *t* test to test for differences in average growth between the control group and test group. Data were compiled and organized in an Excel spreadsheet. The Statistical Package for the Social Sciences (SPSS) version 19.0 was used for data analysis.

The researcher analyzed the August 2011 Acuity Predictive Benchmark Assessment A scaled scores and compared them to March 2012 Acuity Predictive Benchmark Assessment C scaled scores to show growth. To analyze the difference a growth score was calculated using the posttest minus the pretest score for each student. Scores were compiled to determine an average growth score for the test group, and for the control group. The researcher ran an independent samples *t* test to test for differences in average growth between the control group and test group. Data were compiled and organized in an Excel spreadsheet. The Statistical Package for the Social Sciences (SPSS) version 19.0 was used for data analysis.

Next, the researcher analyzed and compared the August 2011 STAR Reading Assessment ORF rating to the March 2012 STAR ORF rating to show growth. To analyze the difference a growth score was calculated using the posttest rating minus the pretest rating for each student. Scores were compiled to determine an average growth score for the test group and for the control group. An independent samples *t* test was conducted to test for differences in average growth between the control group and test group using the Excel Microsoft computer program. Data were compiled and organized in an Excel spreadsheet. The Statistical Package for the Social Sciences (SPSS) version 19.0 was used for data analysis.

The August 2011timed writing sample score was analyzed and compared to the March 2012 timed writing sample score to show growth. To analyze the difference a growth score was calculated using the posttest rating minus the pretest rating score for each student. Next, scores were compiled to determine an average growth score for the test group, and for the control group. An independent samples *t* test was conducted to test for differences in average growth between the control group and test group using the Excel Microsoft computer program. Data were compiled and organized in an Excel spreadsheet. The Statistical Package for the Social Sciences (SPSS) version 19.0 was used for data analysis.

Limitations

Limitations are the factors that a researcher has no control over in regard to the study (Lunenberg & Irby, 2008). It is important to note the following limitations in the present study as they may have affected the interpretation of data and may influence its application in general settings.

- The researcher could not control the amount of student background knowledge and prior instruction received concerning word study in the primary grades. Primary teachers within the target school district had access to the Fountas and Pinnell Phonics Lessons (2002) in grades kindergarten through third. The use of these resources, or lack thereof, may have impacted the student achievement results.
- Comprehension instruction strategies used by teachers varied and could have affected the results.
- Teacher efficacy and fidelity to the implementation and use of any program was an inherent limitation when conducting the research.
- Test group teachers showed interest prior to beginning the present study and therefore, were enthusiastic to implement a new spelling strategy. This may affect replication of the present study if teachers are told to implement a new instructional strategy rather than choose to do so themselves.
- Three teachers in the test group and four teachers in the control group implemented the writer's workshop model for writing instruction midway through the present study. Students participating in the workshop model receive writing instruction in a prescribed format. Each session has a mini-lesson focused on students' writing needs. Next, there is a composing time in which students write on matters of their choosing. Finally, the reflection portion of the workshop model provides time for students to discuss their writing with their peers. This may have affected students' spelling scores on the posttest writing sample. Students participating in writer's workshop may have completed more daily writing overall, which might have increased their scores.

Summary

Limited literature exists regarding word study and orthographic development related to intermediate students (Ganske, 2008; Tankersley, 2005). Therefore, the researcher's intent was to examine the effects of developmentally appropriate, explicit word study instruction on intermediate grade students' word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy. Chapter three discussed the details of the present study including the research questions and hypotheses tests conducted. The chapter provided specific information regarding the population, the sample, the tests used to measure student achievement, data collection procedures, data analysis and hypothesis testing, and study limitations. In chapter four the results of the present study are discussed.

Chapter Four

Results

The present study addressed four research questions pertaining to explicit word study instruction and student achievement in word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy. The preceding three chapters contained the pertinent background information, relevant literature review, proposed research questions and hypotheses, and the quantitative methodology associated with this research study. The purpose of chapter four is to present the results of the analysis as they pertain to the present study.

Hypothesis Testing

The results of the hypothesis testing for each of the four research questions are presented in the following section. Quantitative analysis results are presented using a growth score for each question and evaluated using independent samples *t* tests. The first section shares results demonstrating to what extent explicit word study instruction impacted students' word knowledge. Next, results shared demonstrate to what extent explicit word study instruction impacted students' overall reading comprehension as measured by the Acuity Predictive Benchmark Assessment, a district test. Additional results demonstrate to what extent explicit word study instruction impacted students' oral reading fluency (ORF) as measured by the STAR Reading Assessment. Finally, results presented demonstrate to what extent explicit word study instruction had an effect on students' ability to transfer word knowledge into their spelling as applied to written language.

RQ 1: To what extent is there a difference in growth from the pretest to the posttest on the *Words Their Way* Elementary Spelling Inventory (ESI) (Bear et al., 2012) between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? A growth score was calculated by subtracting the pretest score from the posttest score.

H 1: The control group students' ESI growth scores are significantly lower than the test group students' ESI growth scores. The level of significance for the hypothesis test was set at $\alpha = .05$.

The hypothesis testing for question one began with the analysis of the means as displayed below in Table 7. The sample consisted of 244 fourth graders, 119 in the control group and 125 in the test group from a Kansas City, MO school district.

Table 7

Elementary Spelling Inventory (ESI) Growth Scores

Group	*N*	*M*	*SD*
Test	125	2.28	2.89
Control	119	1.94	2.57

Upon analysis, the research hypothesis was not supported. The difference between the mean ESI growth score for the test group ($M = 2.28$, $SD = 2.89$) and the mean ESI growth score for the control group ($M = 1.94$, $SD = 2.57$) was not statistically significant ($t = .987$, $df = 242$, $p = .325$). Though not significantly different, based on the sample mean ESI growth scores, the test group ESI growth score was higher than the control group ESI growth score. On average, students in the control group increased their word knowledge by two words, an average of 13.3% higher than the original score. The

test group students increased their word knowledge, on average, by an additional three words, 18.7% higher than the original score. This suggests that to some extent explicit word study instruction may have an effect on students' word knowledge.

RQ 2: To what extent is there a difference in growth from the pretest to the posttest on the Acuity Benchmark Assessment between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? A growth score was calculated by subtracting the pretest (Acuity Predictive Benchmark A) score from the posttest (Acuity Predictive Benchmark C) score.

H 2: The control group students' Acuity Predictive Benchmark Assessment growth scores are significantly lower than the test group students' Acuity Predictive Benchmark Assessment growth scores. The level of significance for the hypothesis test was set at $\alpha = .05$.

The hypothesis testing for question two began with the analysis of the means as displayed below in Table 8. Upon analysis, the research hypothesis was not supported. The difference between the mean Acuity Predictive Benchmark Assessment growth score for the test group ($M = 23.90$, $SD = 42.27$) and the mean Acuity Predictive Benchmark Assessment growth score for the control group ($M = 21.89$, $SD = 42.13$) was not statistically significant ($t = .372$, $df = 242$, $p = .710$).

Table 8

Acuity Predictive Benchmark Assessment Growth Scores

Group	*N*	*M*	*SD*
Test	125	23.90	42.27
Control	119	21.89	42.13

Though not significantly different, based on the sample mean Acuity Predictive Benchmark Assessment growth scores, the test group Acuity Predictive Benchmark Assessment growth score was higher than the control group Acuity Predictive Benchmark Assessment growth score. On average, students in the control group increased their Acuity Predictive Benchmark Assessment scores by twenty-one points, 4.6% higher than the original score. The test group students increased their Acuity Predictive Benchmark Assessment scores on average by twenty-four points, 5.1% higher than the original score. This suggests that to some extent explicit word study instruction may have an effect on students' reading comprehension.

RQ 3: To what extent is there a difference in growth from the pretest to the posttest on the STAR Estimated Oral Reading Fluency (ORF) rating between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal spelling curriculum? A growth score was calculated by subtracting the pretest score from the posttest score.

H 3: The control group students' STAR Estimated ORF growth scores are significantly lower than the test group students' STAR Estimated ORF growth scores. The level of significance for the hypothesis test was set at $\alpha = .05$.

The hypothesis testing for question three began with the analysis of the means as displayed below in Table 9. Upon analysis, the research hypothesis was not supported. The difference between the mean STAR Estimated ORF growth score for the test group (M = 17.16, SD = 27.94) and the mean STAR Estimated ORF growth score for the control group (M = 14.57, SD = 23.54) was not statistically significant (t = .781, df = 242, p = .436).

Table 9

STAR Estimated Oral Reading Fluency (ORF) Growth Scores

Group	*N*	*M*	*SD*
Test	125	17.16	27.94
Control	119	14.57	23.54

Though not significantly different, based on the sample mean STAR Estimated ORF growth scores, the test group STAR Estimated ORF growth score was higher than the control group STAR Estimated ORF growth score. The control group oral reading fluency score increased on average by fourteen words, 13.1% higher than the original score. The test group students increased their STAR Estimated ORF growth scores on average by eighteen words, 15.8% higher than the original score. This suggests that to some extent explicit word study instruction may have an effect on students' oral reading fluency.

RQ 4: To what extent is there a difference in growth from the pretest to the posttest on the timed writing sample between students receiving explicit word study instruction and students receiving spelling instruction using the district's adopted basal

spelling curriculum? A growth score was calculated by subtracting the pretest score from the posttest score.

H 4: The control group students' independent timed writing growth scores are significantly lower than the test group students' independent timed writing growth scores. The level of significance for the hypothesis test was set at $\alpha = .05$.

The hypothesis testing for question four began with the analysis of the means as displayed below in Table 10. Upon analysis, the research hypothesis was supported. The difference between the mean independent timed writing growth score, a measure of everyday spelling accuracy, for the test group ($M = .038$, $SD = .068$) and the mean independent timed writing growth score for the control group ($M = .005$, $SD = .092$) was significantly different ($t = 3.15$, $df = 242$, $p = .002$).

Table 10

Writing Sample Growth Scores

Group	*N*	*M*	*SD*
Test	125	.038	.068
Control	119	.005	.092

The control group students increased in everyday spelling accuracy, on average, by eight words, 17.8% higher than the original score. Students in the test group increased in everyday spelling accuracy, by nine words, an average of 19.6% higher than the original score. This suggests that explicit word study instruction has an effect on students' ability to apply their word knowledge in written communication.

Summary

The results from independent samples *t* tests did not indicate a statistically significant difference between the test group's and control group's Elementary Spelling Inventory growth scores, Acuity Predictive Assessment growth scores, and the STAR Estimated ORF growth scores; however, students in the control group demonstrated higher achievement on each of these tests. This warrants further research to determine if explicit word study instruction has a statistically significant effect on students' basic word knowledge, as well as an effect on word knowledge in regard to comprehension and fluency. The results from the independent samples *t* test of independent means did indicate a statistically significant difference between the test group's and control group's independent timed writing growth scores, suggesting explicit word study instruction has an effect on students' everyday spelling accuracy in written communication. Chapter five reviews the present study and its results, discusses findings as related to literature, suggests implications for action, and recommends future research.

Chapter Five

Interpretation and Recommendations

Increasing comprehension of complex text for all students is at the forefront of many elementary teachers' and administrators' minds as the Common Core State Standards (CCSS) are being adopted across the nation (Fisher, Frey, & Lapp, 2012). The English language arts CCSS identify the area of language, specifically vocabulary, as one component necessary for deepening text comprehension. Because vocabulary spans the ELA curriculum, but remains a component of comprehensive literacy instruction, it is identified as a separate strand with its own criteria (Council of Chief State School Officers & National Governors Association, 2011c). Implementing research-based teaching strategies, such as explicit word study instruction outlined in the resource, *Words Their Way* (Bear et al., 2012), provides sound instructional practice and supports comprehensive reading instruction (Calkins, 2011). The purpose of the present study, as well as background information and significance, were presented in chapter one. Chapter two presented a review of literature and research to support explicit word study instruction. The methodology used to conduct the present study was presented in chapter three. Data collection processes and results of the hypothesis testing were outlined in chapter four. Chapter five reviews the present study by discussing the following factors: an overview of the problem, the purpose statement, and the research questions, a review of the methods, and the major findings. In addition, the researcher provides an examination of the findings related to the literature, recommendations for future research considerations, and concluding remarks as they relate to explicit word study instruction.

Study Summary

Adolescents struggle with foundational literacy skills, thus preventing them from reading fluently and comprehending complex text (Roberts et al., 2008). With the implementation of the Common Core State Standards and a focus on vocabulary as one component of comprehensive literacy instruction, teachers and administrators in the target district of the present study determined a need for change in classroom spelling pedagogy. Research indicates explicit word study instruction based on the orthographic developmental level of the learner provides a method for allowing teachers to deepen students' understanding of text (Bear et al., 2012; Ganske, 2000, 2008). Exploration through word sorts and word games enables students to develop familiarity with words and their synonyms, antonyms, and derivatives (Benjamin & Crow, 2010). These skills provide an avenue for students to "demonstrate understanding of word relationships and nuances in word meanings" as required by the Common Core State Standards (Council of Chief State School Officers & National Governors Association, 2011b, p. 51). To provide skill instruction to meet the requirements of the CCSS, the target district decided to pursue the use of explicit word study instruction based on the orthographic developmental level of the learner.

Overview of the problem. Ganske (2008) and Tankersley (2005) found little research conducted to show the effects of explicit word study instruction in the intermediate grades, specifically fourth grade. However, much research exists to show the positive effects of explicit word study instruction in the primary grades (Bear & Barone, 1989; Ehri & Wilce, 1987; Juel, C., Griffith, P., & Gough, P., 1986; Read, 1971; Tremain, 1993). Word study instruction, one component of early literacy instruction,

provides foundational knowledge in phonemic awareness and word recognition enabling students to understand the orthographic system (Ehri & Roberts, 1979; Tankersley, 2003). As states begin to transition to the Common Core State Standards, school districts strive to implement practices to meet the standards while utilizing research-based instructional strategies (Allington, 2011; Vaughn & Thompson, 2004). The present study supports the need to increase students' word knowledge through the use of a systematic, developmentally appropriate research-based methodology.

Purpose statement and research questions. The present study was designed to determine the level of impact increased word knowledge had on students' literacy skills. Specifically, the research sought to determine the effect explicit word study instruction had on students' word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy. The Elementary Spelling Inventory was utilized to measure students' achievement in word knowledge. The Acuity Predictive Benchmark Assessment was utilized to measure students' achievement in reading comprehension. The STAR Reading Assessment was utilized to measure students' achievement in oral reading fluency. The timed writing samples were utilized to measure students' achievement in everyday spelling accuracy.

Review of methodology. This research study followed a quasi-experimental design, using pretest and posttest measures to evaluate achievement as determined by a growth score relative to each research question. A purposive sample of students from twelve fourth grade classrooms in a Mid-western school district participated in the present study. Students in the test group received explicit word study instruction, while the control group students received traditional spelling instruction through the district's

adopted basal spelling curriculum. The independent variable for the present study was the type of spelling instruction the students received. The dependent variables used for this experiment included word knowledge as determined by the Elementary Spelling Inventory, reading comprehension as determined by the Acuity Predictive Benchmark Assessments, oral reading fluency as determined by the STAR Reading Assessment, and everyday spelling accuracy as determined by the independent timed writing samples. Finally, using growth scores, the researcher conducted independent samples *t* tests to compare average growth between the test group and control group on each assessment utilized.

Major findings. Using quantitative data collected as it pertained to the effect of explicit word study instruction on students' literacy skills, specifically, word knowledge, reading comprehension, oral reading fluency, and everyday spelling accuracy determined the major findings of the present study. These four areas are described below.

Word knowledge. An independent samples *t* test was used to analyze research question one: To what extent is there a change in the pretest and posttest scores *Words Their Way* Elementary Spelling Inventory (ESI) (Bear et al., 2012) between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum? The results of the independent samples *t* test indicated there was not a statistically significant difference between the growth scores of the test group students who received explicit word study instruction and the control group students who received instruction based on the district's adopted basal spelling curriculum. However, the test group's growth score increased

more than the control group's growth score. This indicates explicit word study instruction may have an impact on students' word knowledge as measured by the ESI.

Reading comprehension. An independent samples *t* test was used to analyze research question two: To what extent is there a change in the pretest and posttest scores of the Acuity Predictive Benchmark Assessment A and the Acuity Predictive Benchmark C communication arts comprehension between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum? The results of the independent samples *t* test indicated there was not a statistically significant difference between the growth scores of the test group students who received explicit word study instruction and the control group students who received instruction based on the district's adopted basal spelling program. However, the test group's growth score increased more than the control group's growth score. This indicates explicit word study instruction may have an impact on students' reading comprehension as measured by the Acuity Predictive Benchmark Assessments A and C.

Oral reading fluency. An independent samples *t* test was used to analyze research question three: To what extent is there a change in the pretest and posttest scores of the STAR Estimated Oral Reading Fluency (ORF) rating between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum? The results of the independent samples *t* test indicated there was not a statistically significant difference between the growth scores of the test group students who received explicit word study instruction and the control group students who received instruction based on the district's adopted basal spelling program. However, the test group's growth score increased more

than the control group's growth score. This indicates explicit word study instruction may have an impact on students' oral reading fluency rates as measured by the STAR Estimated Oral Reading Fluency rating.

Everyday spelling accuracy. An independent samples *t* test was used to analyze research question four: To what extent is there a change in the pretest and posttest scores of the percentage of correctly spelled words in the timed writing samples between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum? As reported in chapter four, the results from the independent samples *t* test indicated a statistically significant difference between the growth scores of the test group students who received explicit word study instruction and the control group students who received instruction based on the district's adopted basal spelling program. This indicates explicit word study instruction does have an impact on students' ability to apply their word knowledge in written communication determined by everyday spelling accuracy as demonstrated in the timed writing sample.

Findings Related to Literature

Overall, the findings of the present study are mixed in relation to the findings in the literature. The use of explicit word study instruction rather than traditional spelling instruction derived from a basal curriculum to increase word knowledge, reading comprehension, and oral reading fluency was not supported statistically by the results of the present study. However, growth scores indicated a greater increase in each area by students in the test group. The use of explicit word study instruction to increase everyday spelling accuracy did demonstrate difference at the level of statistical significance.

Specific connections between the present study and the literature are discussed in the sections below.

Word knowledge. The findings of the present study challenge the results of various studies. According to the literature, students' spelling is developmental. For young children, spelling is not arbitrary; rather it is purposeful in nature and predictable as patterns emerge over time (Read, 1971). Building on Read's studies of spelling development, Henderson and Beers (1980) categorized the spelling errors of young children and noticed that orthographic knowledge was acquired through a progression of stages. Children who were more familiar with English orthography relied less on sound and more on spelling patterns. They were able to incorporate visual cues with sound cues indicating movement from one orthographic developmental level to the next.

Students who received explicit word study instruction increased orthographic knowledge (Bear et al., 2012; Ganske, 2000; & Henderson & Templeton, 1986). Sharp, Sinatra, and Reynolds (2008) found that as students increased orthographic understanding through explicit word study instruction, their spelling development increased. Third graders in a study conducted by Abbott (2000) showed greater growth in spelling knowledge when instruction was based on their orthographic developmental level. Those who received explicit word study instruction demonstrated a greater proficiency in their ability to rationalize the use of spelling patterns when spelling new words.

Test group students in the present study received spelling instruction at their level of orthographic development. Similar to Abbott's study (2000) students in the present study participated in activities such as word sorts and games allowing them to categorize words and become familiar with spelling patterns. Findings of the present study

demonstrated that test group students were able to increase word knowledge as measured by the Elementary Spelling Inventory, but not significantly more than the control group students.

Reading comprehension. The findings of the present study challenge the results of various studies related to word study and reading comprehension. According to the literature, when students are not proficient readers, their higher level cognitive abilities are consumed with decoding letters into their associated sounds and are not free to focus on comprehension (Kuhn and Stahl, 2000; Rasinski & Padak, 2008). Rasinski and Padak (2008) also determined that students are able to increase comprehension, a deep reading structure, only when the bridge between word identification and comprehension is built. Through explicit word study instruction, students increase word recognition abilities laying the foundation for the bridge between decoding and comprehension (Rasinski & Padak, 2008).

Miller and Schwanenflugel (2006) found it necessary to lessen the pull on cognitive abilities for decoding purposes. They stated that students who require more skills for decoding are less apt to make the connections necessary for comprehending text. Keene (2008) further supported Miller and Schwanenflugel's (2006) statement with her research regarding surface reading structures and deep reading structures. She found students who received comprehensive literacy instruction, with explicit word study being one component, and command the surface reading structures, are better able to use deeper reading structures to make meaning of text.

Test group students in the present study received spelling instruction at their level of orthographic development, supporting Keene and Zimmerman's (2007) statement

that students should receive developmentally appropriate explicit word study instruction. Findings of the present study demonstrated that test group students were able to increase reading comprehension as measured by the Acuity Predictive Benchmark Assessment, but not significantly more than the control group students.

Oral reading fluency. The findings of the present study challenge the results of research conducted in the area of oral reading fluency. Ehri (1987) and Ehri and Wilce (1987) found that students must gain sufficient orthographic knowledge in order to allow for transfer of letters to sounds. Ehri and Wilce (1987) stated that beginning readers must be taught to decode words to facilitate reading. Through decoding, students' learn to associate letters with sounds. This association is stored in memory enabling students to later recall the connection between spellings and pronunciation (Ehri & Wilce, 1987). During a study of kindergartners, Ehri and Wilce (1987) found that students who received explicit spelling instruction had greater ability to transfer the letter sound association stored in memory to word recognition. It was further concluded "not only children's ability to read words [increased] but also their ability to decode unfamiliar words [increased]" (Ehri & Wilce, 1987, p. 31).

Research conducted by Rasinski and Padak (2008) found that explicit word study instruction indicated students who acquired strategies allowing them to decode words became fluent readers. Furthermore, Zutell and Rasinski (1989) confirmed during a study of 72 third graders that there is a strong relationship between spelling and oral reading fluency. Their findings support the need for development of orthographic knowledge as an underpinning for successful word identification.

Test group students in the present study received spelling instruction at their level of orthographic development. This instruction supports Roberts, Christo, and Shefelbine, (2011), Stanovich (1991), and Gough (1984) as they found students must possess a rich foundation of orthographic knowledge to aid in the reading process, specifically fluent word recognition, which leads to fluent reading. Findings of the present study demonstrated that test group students were able to increase oral reading fluency as measured by the STAR Reading Assessment, but not significantly more than the control group students.

Everyday spelling accuracy. The findings of the present study statistically support the use of explicit word study instruction over traditional spelling instruction derived from a basal curriculum to increase everyday spelling accuracy. These findings are consistent with Juel's (1988) longitudinal study of fifty-four children from first through fourth grades. Juel (1988) found that poor readers might become poor writers, because they are hesitant to use words that are difficult to spell. Levels of proficiency fall short, as students are not able to apply spelling principles in written language. Students receiving explicit word study instruction exhibit more confidence in daily spelling. Test group students had greater growth in spelling accuracy, which might indicate greater spelling confidence.

The results of research conducted by Bear et al. (2012) and Hodges (1984) regarding spelling and spelling patterns is also supported by the present study. Research demonstrated that patterns, once generalized, could be applied in written language. Hodges (1984) stated, "visual knowledge about words are brought into play when older students spell, the visual knowledge having been acquired, of course, only from extensive

prior experiences with reading and writing" (pg. 2). Through explicit word study instruction, students manipulate words in order to experience them in a variety of contexts, allowing students to develop generalities of the "structural properties of English words" (Hodges, 1984, pg. 2). Findings reported by Bear et al. (2012) and Hodges (1984) attribute to Snowball's (1993) belief that students are more apt to take greater risks with unknown words when writing if they have developed generalized patterns and understandings. She further stated that strong orthographic knowledge equips students with necessary skills and understanding to use when communicating through written language.

Test group students in the present study received spelling instruction at their level of orthographic development. The results of the present study demonstrated students with explicit word study instruction spelled, on average, a greater number of words correctly than those students who received the district's adopted basal spelling curriculum instruction. These findings indicate test group students have the ability to spell a greater number of words at a higher level of accuracy, possibly due to an increase in spelling pattern knowledge.

Conclusions

The results of the present study are mixed in nature. While the findings regarding the relationship between explicit word study instruction and word knowledge, explicit word study instruction and reading comprehension, and explicit word study instruction and oral reading fluency do not demonstrate statistical significance, the mean growth score for the test group students was larger than that for the control group students in each area. In regard to everyday spelling accuracy, the mean growth score of students in

the test group was significantly different than the mean growth score of students in the control group. These findings suggest that explicit word study instruction affects students' everyday spelling accuracy, but may not influence students' word knowledge, reading comprehension, and oral reading fluency.

Implications for action. Although the present study did not reflect a statistically significant relationship between explicit word study instruction and students' word knowledge, reading comprehension, and oral reading fluency, students in the test group did demonstrate greater growth in word knowledge, reading comprehension, and oral reading fluency than those in the control group. As noted above, the results of the present study did not reflect a significant difference; however, prior research in this field, shared in chapter two, supports this developmental approach. The conflicting results may be due to the length of time in which the present study was conducted. The length of the present study may not have allowed sufficient time for teachers to become acclimated with the managerial aspects of explicit word study. In addition, the students who received the treatment may have benefitted from prolonged exposure to explicit word study instruction, allowing the potential for greater achievement. Students in studies conducted by Abbott (2000) and Juel (1988) received explicit word study instruction for and entire school year (nine months) and four full school years, respectively. For this reason the target district may benefit by continuing to track the spelling achievement of students in the present study should they continue to receive explicit word study instruction in subsequent grades.

Teachers, as well as administrators and parents of the target district, may find continued monitoring and evaluation of explicit word study helpful when working with

children to increase literacy skills. This long term monitoring and evaluation may reveal data that were not evident during the course of the present study. Students of the target district may benefit from these results, as they are recipients of classroom instruction. As students become more aware of spelling principles, word knowledge, reading comprehension, oral reading fluency, everyday spelling accuracy, increases, ultimately resulting in increased confidence (Juel, 1988).

Results from the present study suggest explicit word study instruction is a desirable alternative to spelling instruction following a prescribed basal program when striving to increase students' everyday spelling accuracy. Through explicit word study instruction, students in the test group acquired a greater word knowledge base and demonstrated increased application in everyday spelling accuracy. Findings suggest it would benefit students to continue word study instruction as a means to increase everyday spelling accuracy. To meet the individual needs of students, using a research-based explicit word study program that is developmentally appropriate, enables educators to differentiate instruction; thus, working within the students' Zone of Proximal Development (Vygotsky, 1987).

Recommendations for future research. Following a thorough examination of the results of the present study, the first recommendation for future research would be to replicate the study and add a survey component. A survey of students and teachers would result in a mixed methods approach, allowing the researcher to examine students' attitudes toward spelling instruction, as well as teachers' perceptions regarding the effects of explicit word study instruction. Throughout the present study it was evident that the test group students' attitudes and teachers' attitudes were altered based on the use of an

explicit word study instructional model. Casual comments shared with the researcher by students and teachers during collegial conversations illustrated an increased awareness of spelling instruction. Formal data collection, however, did not occur.

A second recommendation is to conduct a longitudinal study. Increasing the length of time over which the study occurs would allow for a greater amount of time over which to administer the treatment. Following a student cohort who receives spelling instruction through an explicit word study model over a longer period of time, possibly throughout their intermediate grades (grades three through five), might yield statistically significant results and provide more reliable, valid data. Second, the present should be replicated in classrooms utilizing a writer's workshop model. This could determine if explicit writing instruction done in conjunction with explicit word study instruction increases everyday spelling accuracy in daily writing.

A subsequent study focusing on everyday spelling accuracy may benefit the body of literature when students' ability to transfer spelling patterns to written language is analyzed. For example, after instruction on long /a/ patterns occurs, a writing sample could be analyzed for the usage of the explicitly taught patterns. This process could be repeated for each pattern taught throughout the course of the study.

A final recommendation for future research would be to look at students who receive explicit word study instruction and assess their movement among the developmental stages. Using Ganske's (2000) feature inventories could facilitate the gathering of data to assess students' word knowledge acquisition. Through the use of this tool, movement within the individual levels as well as advancement to new orthographic developmental levels could determine students' word knowledge growth.

Concluding remarks. Literacy education continues to be of major concern in the intermediate grades. Teachers must implement research-based strategies in the classroom in order to equip students with the tools necessary for reading effectively (Allington, 2011). Word knowledge, one small facet of comprehensive literacy instruction, is instrumental in bridging the gap between simple decoding and the ultimate goal of reading, understanding (Rasinski & Padak, 2008). Ganske (2000) stated, "Reading and writing provid[e] the purpose and the vehicle for learning about words, and word study serve[s] as the means for strengthening and advancing students' understanding of words so they [can] read and write more fluently" (pg. 4). Bridging the gap between fluency and comprehension, explicit word study instruction may provide the tools necessary to help students read and write effectively in the 21st Century.

References

Abbott, M. I. (2000). *Effects of traditional versus extended word study spelling instruction on student achievement and transfer of orthographic knowledge.* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (Publication No. AAT 9980246)

Allington, R. L. (2011). What at-risk readers need. *Educational Leadership, 68*(6), 40-45.

Applegate, M. D., Applegate, A. J., & Modla, V. B. (2009). "She's my best reader; She just can't comprehend": Studying the relationship between fluency and comprehension. *The Reading Teacher*, *62*(6), 512-521. doi: 101598/RT.62.6.5

Bear, D. R., & Barone, D. (1989). Using children's spellings to group for word study and directed reading in the primary classroom. *Reading Psychology, 10*(3), 275-292. doi: 10.1080/0270271890100305

Bear, D. R., Invernizzi, M., Templeton, S., & Johnston, F. (2012). *Words their way: Word study for phonics, vocabulary, and spelling instruction (5th ed.).* Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Bear, D. R., & Templeton, S. (1998). Explorations in developmental spelling: Foundations for learning and teaching phonics, spelling, and vocabulary. *The Reading Teacher, 52*(3), 222-242.

Bear, D., Truex, P., & Barone, D. (1989). In search of meaningful diagnoses: Spelling-by-stage assessment of literacy proficiency. *Adult Literacy and Basic Education, 13*(3), 165-185.

Beers, J. W., & Henderson, E. H. (1977). A study of developing orthographic concepts among first graders. *Research in the Teaching of English, 11*(2), 133-148.

Benjamin, A., & Crow, J. T. (2010). *Vocabulary at the center*. Larchmont, NY: Eye on Education.

Bodrova, E., & Leong, D. J. (2007). *Tools of the mind: A Vygotskian approach to early childhood education*. Upper Saddle River, NJ: Pearson Education.

Calkins, L. (2011). *A curricular plan for the reading workshop*. Portsmouth, NH: Heinemann.

Chard, D.J., Ketterlin-Geller, L.R., Baker, S.K., Doabler, C., & Apichatabutra, C. (2009). Repeated reading interventions for students with learning disabilities: Status of the evidence. *Exceptional Children 75*(3), 263–281.

Christenbury, L., Bomer, R., & Smagorinsky, P. (2009). Part II: Literacy in schools. In L. Christenbury, R. Bomer, & P. Smagorinsky (Eds.), *Handbook of adolescent literacy research* (pp. 47-48). New York, NY: Guilford Press.

Council of Chief State School Officers, & National Governors Association. (2011a). Common Core State Standards: About the standards. Retrieved from www.corestandards.org/about -the-standards

Council of Chief State School Officers, & National Governors Association. (2011b). Common Core State Standards for English language arts & literacy in history/social studies, science, and technical subjects. Retrieved from www.corestandards.org/CCSSI_ELA%20Standards.pdf

Council of Chief State School Officers, & National Governors Association. (2011c). Common Core State Standards: Key points in English language arts. Retrieved from www.corestandards.org/key-points-in-english-language-arts

Creswell, J.W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

CTB/McGraw-Hill Companies. (2010). *The efficacy of the Acuity Predictive Assessments: A review of empirical data studies*. Retrieved from http:// www.acuityforschool.com/pdfs/whitepaper_acuity_predictiveassessment.pdf

Cunningham, A. E., Nathan, R. G., & Raher, K. S. (2011). Orthographic processing in models of word recognition. Word recognition. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. A. Afflerbach (Eds.), *Handbook of reading research, volume IV* (pp. 259-285). New York, NY: Routledge.

Daane, M. C., Campbell, J. R., Grigg, W. S., Goodman, M. J., & Oranje, A. (2005). *Fourth-grade students reading aloud: NAEP 2002 special study of oral reading (NCES 2006-469).* Washington, DC: Government Printing Office.

Davis, L. (2012). 5 Things every teacher should be doing to meet the Common Core State Standards. Retrieved from http://www.eyeoneducation.com/Blog/articleType/ ArticleView/articleId/1711/5-Things-Every-Teacher-Should-be-Doing-to-Meet-the-Common-Core-State-Standards

Del Rio, P., & Alvarez, A. (2007). Inside and outside the zone of proximal development. In H. Daniels, M. Cole, & J. V. Wertsch (Eds.), *The Cambridge companion to Vygotsky* (pp. 276-303). New York, NY: Cambridge University Press.

Dixon-Krauss, L. (1996). *Vygotsky in the classroom: Mediated literacy instruction and assessment*. White Plains, NY: Longman.

Donnell, W. J. (2005). *The effects of multisensory vowel instruction during word study for third grade students* (Unpublished doctoral dissertation). University of Missouri-Kansas City, Kansas City, Missouri.

Ehri, L. C. (1987). *Movement into word reading and spelling: How spelling contributes to reading* (Report No. 10). Retrieved from National Writing Project website: http://www.nwp.org/cs/public/print/resource/596

Ehri, L. C. (1998). Grapheme-phoneme knowledge is essential for learning to read words in English. In J. L. Metsala, & L. C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 3-40). Mahwah, NJ: Erlbaum.

Ehri, L. C., & Roberts, K. (1979). Do beginners learn printed words better in context or isolation? *Child Development, 50*(3), 675-685.

Ehri, L. C., & Wilce, L. S. (1987). Movement into reading: Is the first stage of printed word learning visual or phonetic? *Reading Research Quarterly, 20*(2) 163-179.

Fisher, D., Frey, N., & Lapp, D. (2012). *Text complexity: Raising rigor in reading*. Newark, DE: International Reading Association.

Fraenkel, J. R., & Wallen, N. E. (2000). *How to design & evaluate research in education* (4th ed.). Boston, MA: McGraw Hill.

Fuchs, L.S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading, 5*(3)*,* 239-256.

Gallimore, R., & Tharp, R. (1990). Teaching mind in society: Teaching, schooling, and literate discourse. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 155-172). New York, NY: Cambridge University Press.

Ganske, K. (2000). *Word journeys: Assessment-guided phonics, spelling, and vocabulary instruction*. New York, NY: The Guilford Press.

Ganske, K. (2008). *Mindful of words: Spelling and vocabulary explorations 4-8*. New York, NY: The Guilford Press.

Gavelek, J. R., & Raphael, T. E. (1996). Changing talk about texts: New roles for teachers and students. *Language Arts, 73*(3), 182-192.

Geist, H., & Lompscher, J. (2003). Formation of learning activity and theoretical thinking in science teaching. In A. Kozulin, B. Gindis, V. S. Ageyev, & S. M. Miller (Eds.), *Vygotsky's educational theory in cultural context* (pp. 267-288). New York, NY: Cambridge University Press.

Gentry, J. R. (1982). An analysis of developmental spelling in GNYS AT WRK. *The Reading Teacher 36*(2), 192-200.

Gentry, J. R. (2004). *The science of spelling: The explicit specifics that make great readers and writes (and spellers!)*. Portsmouth, NH: Heinemann.

Gough, P. (1984). Word recognition. In P. D. Pearson (Ed.), *Handbook of reading research* (pp. 225-254). New York, NY: Longman.

Graham, S., & Hebert, M. (2010). *Writing to read: Evidence for how writing can improve reading. A Carnegie Corporation time to act report*. Washington, DC: Alliance for Excellent Education.

Gregorian, V. (2010). Foreword. In S. Graham, & M. Hebert (Eds.), *Writing to read: Evidence for how writing can improve reading. A Carnegie Corporation time to act report* (pp. 1-2). Washington, DC: Alliance for Excellent Education.

Hargreaves, A. (1984). Experience counts, theory doesn't: How teachers talk about their work. *Sociology of Education, 57*(4)*,* 244-254.

Harris, T. L., & Hodges, R. E. (Eds.). (1995). *The literacy dictionary: The vocabulary of reading and writing.* Newark, DE: International Reading Association.

Hawkins, M. F. (2003). *Spelling through writing: A qualitative study of instructional strategies to promote developmental spelling* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. (UMI No. 3115554)

Haystead, M., & Marzano, R. (2009). *Meta-Analytic synthesis of studies conducted at Marzano Research Laboratory on instructional strategies*. Retrieved from http://marzanoevaluation.com

Henderson, E. H. (1981). *Learning to read and spell: The child's knowledge of words.* DeKalb, IL: Northern Illinois University Press.

Henderson, E. H., & Beers, J. W. (1980). *Developmental and cognitive aspects of learning to spell: A reflection of word knowledge.* Newark, DE: International Reading Association.

Henderson, E. H., & Templeton, S. (1986). A developmental perspective of formal spelling instruction through alphabet, pattern, and meaning. *The Elementary School Journal 86*(3), 305-316.

Hodges, R. E. (1984). *Spelling*. Urbana, IL: ERIC Clearinghouse on Reading and Communication Skills. Retrieved from ERIC database. (ED250695)

Hoover, W. A. (1996). The practice implications of constructivism. *SEDLetter*, 9(3). Retrieved from http://www.sedl.org/pubs/sedletter/v09n03/practice.html

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, *80*(4), 437-447. doi:10.1037/0022-0663.80.4.437

Juel, C., Griffith, P., & Gough, P. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology, 78*(4), 243-255.

Karpov, Y. V. (2003). Vygotsky's doctrine of scientific concepts. In A. Kozulin, B. Gindis, V. S. Ageyev, & S. M. Miller (Eds.), *Vygotsky's educational theory in cultural context* (pp. 65-82). New York, NY: Cambridge University Press.

Keene, E. (2008). *To understand: New horizons in reading comprehension.* Portsmouth, NH: Heinemann.

Keene, E. & Zimmermann, S. (2007). *Mosaic of thought: The power of comprehension strategy instruction*. Portsmouth, NH: Heinemann.

Keller, J. D. (1999). Deciphering teacher lounge talk. *Phi Delta Kappan, 81*(4), 328-329.

Kendall, J., (2011). *Understanding Common Core State Standards*. Denver, CO: McREL.

Kuhn, M. R., & Stahl, S. A. (2000) *Fluency: A review of developmental and remedial practices* (CIERA Rep. No. 2-008). Ann Arbor, MI: Center for the Improvement of Early Reading Achievement.

Locke, M. (2012). Core changes: Tools to help you and your staff stay up-to-date on Common Core curricula changes. Retrieved from http://www.scholastic.com/browse/article.jsp?id=3756882

Lunenberg, F. C., & Irby, B. J. (2008). *Writing a successful thesis or dissertation: Tips and strategies for students in the social and behavioral sciences*. Thousand Oaks, CA: Corwin Press.

MacEachron, D. B. (2008). *Becoming fluent: Orthographic learning in self-teaching* (Doctoral dissertation.) Retrieved from Proquest Dissertations and Theses database. (UMI No. 3331720)

MacMillan/McGraw-Hill. (2007). *Treasures: A reading/language arts program*. Columbus, OH: The McGraw-Hill Companies.

Miller, J., & Schwanenflugel, P. J. (2006). Prosody of syntactically complex sentences in the oral reading of young children. *Journal of Educational Psychology, 98*(4), 839-843. doi:10.1037/0022-0663.98.4.839

Morris, D. (1982). Word sort: A categorization strategy for improving word recognition ability. *Reading Psychology: An International Quarterly*, *3*(3), 247-259.

National Center on Response to Intervention. (n.d.a). Acuity: English language arts. Retrieved from http://www.rti4success.org/screeningtools

National Center on Response to Intervention. (n.d.b). STAR: Reading. Retrieved from http://www.rti4success.org/screeningtools

Neuman, S. B., Newman, E. H., & Dwyer, J. (2011). Educational effects of a vocabulary intervention on preschooler's word knowledge and conceptual development: A cluster-randomized trial. *Reading Research Quarterly 46*(3), 249-272.

Rasinski, T. & Padak, N. (2008). *The fluent reader: Oral reading strategies for building word recognition, fluency, and comprehension*. New York, NY: Scholastic.

Rasinski, T. V., & Hoffman, J. V. (2003). Theory and research into practice: Oral reading in the school literacy curriculum. *Reading Research Quarterly, 38*(4)*,* 510-522.

Read, C. (1971). Pre-school children's knowledge of English phonology. *Harvard Educational Review, 41*(1), 1-34.

Read, C. (1986). *Children's creative spelling.* Boston, MA: Routledge & Kegan Paul.

Rehder, B., & Hastie, R. (2004). Category coherence and category-based property induction. *Cognition, 91*(2), 113-153. doi:101016/Soo10-0277(03)00167-7

Renaissance Learning. (2010). *Star reading technical manual.* Wisconsin Rapids, WI: Renaissance Learning.

Richgels, D. J. (2001). Invented spelling, phonemic awareness, and reading and writing instruction. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 142-155). New York, NY: The Guilford Press.

Roberts, G., Torgesen, J. K., Boardman, A., & Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice, 23*(2), 63-69.

Roberts, T. A., Christo, C., & Shefelbine, J. A. (2011). Word recognition. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. A. Afflerbach (Eds.), *Handbook of reading research, volume IV* (pp. 229-257). New York, NY: Routledge.

Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C. K., & Torgesen, J. K. (2007). *Interventions for adolescent struggling readers: A meta-analysis with implications for practice*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Schon, D. (1983). *The reflective practitioner.* New York, NY: Basic Books.

Sharp, A. C., Sinatra, G. M., & Reynolds, R. E. (2008). The development of children's orthographic knowledge: A microgenetic perspective. *Reading Research Quarterly, 43*(3), 206-226. doi: 10.1598/RRQ.43.3.1

Snowball, D. (1993). A sensible approach to teaching spelling. *Teaching K-8, 23*(8), 49-53.

Stahl, S. (2001). Teaching phonics and phonological awareness. In S. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 33-347). New York, NY: The Guilford Press.

Stanovich, K. (1991). Changing perspectives on word recognition. In D. Pearson, R. Barr, M. Kamil, & M. Mosenthal (Eds.), *Handbook of reading research* (pp. 418-452). New York, NY: Longman.

Stanovich, K. E. (1994). Constructivism in reading education. *Journal of Special Education, 28*(3), 259-274.

Sterbinsky, A. (2007). *Words their way spelling inventories: Reliability and validity analyses*. Memphis, TN: Center for Research in Educational Policy.

Tankersley, K. (2003). *The threads of reading: Strategies for literacy development*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tankersley, K. (2005). *Literacy strategies for grades 4-12.* Alexandria, VA: Association for Supervision and Curriculum Development.

Templeton, S. (1983). Using the spelling/meaning connection to develop word knowledge in older students. *Journal of Reading*, *27*(1)*,* 8-14.

Templeton, S. (1991). Teaching and learning the English spelling system: Reconceptualizing method and purpose. *The Elementary School Journal, 92*(2), 185-201.

Tracey, D. H., & Morrow, L. M. (2006). *Lenses on reading: An introduction to theories and models*. New York, NY: The Guilford Press.

Tremain, R. (1993). *Beginning to spell.* New York, NY: Oxford University Press.

Tudge, J. (1990). Vygotsky, the zone of proximal development, and peer collaboration: Implications for classroom practice. L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 155-172). New York, NY: Cambridge University Press.

Vaughn, S., & Thompson, S. L. (2004). *Research-based methods of reading instruction: Grades K-3.* Alexandria, VA: Association for Supervision and Curriculum Development.

Vygotsky, L. S. (1978). *Mind in society*. M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.). Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1987). The development of scientific concepts in childhood (N. Minick, Trans.). In R. W. Rieber, & A. S. Carton (Eds.). *The collected works of L. S. Vygotsky: Volume I problems of general psychology* (pp. 167-241). New York, NY: Plenum Press.

Walker, D., & Lambert, L. (1995). Learning and leading theory: A century in the making. In D. Walker & L. Lambert (Eds.), *The constructivist leader* (pp. 1-27). New York, NY: Teachers College Press.

Zinchenko, V. P. (2007). Thought and word. In H. Daniels, M. Cole, & J. V. Wertsch (Eds.), *The Cambridge companion to Vygotsky* (pp. 212-245). New York, NY: Cambridge University Press.

Zutell, J. (1979). Spelling strategies of primary school children and their relationship to Piaget's concept of decentration. *Research in the Teaching of English, 13*(1), 69-80.

Zutell, J., & Rasinski, T. (1989). Reading and spelling connections in third and fifth grade students. *Reading Psychology: An International Quarterly*, *10*(2), 137-155.

Appendices

Appendix A: Professional Development Modules

The researcher delivered professional development to the test group teachers over a four-day period, with each session lasting for four hours. The information presented during each session was taken from Words Their Way (Bear et al., 2012).

INTRODUCTION – Day 1

- Name, grade/school, one thought about spelling….
- Share *Phoebe and the Spelling Bee* by Barney Saltzberg excerpt…
- Students memorize – but often forget how to spell the word because no pattern or orthographic strategy has been attached to the word

ACTIVITY

- Scenario

Scenario
Sue, a 3rd grade student, reads on grade level and performs at or above grade level on standardized tests. Each week she is given a new spelling list centered around a pattern and studies all week, so that she can be prepared for the Friday spelling test. Friday rolls around, and Sue takes the test, scoring 100%, without fail. However, in the days to follow, Sue's ability to spell the words from the weekly list within her own writing is lacking.

How would you address Sue's instructional needs?

- What not's working in your current classroom in regards to spelling and word instruction? Partner and discuss.
- Share out…

LITERACY BRAID

- Orthography
- Reading
- Oral Language
- Stories
- Writing

HISTORY

Charles Read (1971) looked at young children's spelling attempts – led us to invented spelling. These attempts were not random displays of guesses, rather a system approach using phonetic logic to categorize English speech sounds.

Shortly after, Edmund Henderson looked at this logic across age spans and grade levels.

Read's findings laid the foundation for the developmental levels we use today to determine a child's developing word knowledge, allowing teachers to provide timely instruction in phonics, spelling, and vocabulary.

Edmund Henderson, Donald Bear, and Shane Templeton extended Read's findings to develop a comprehensive model of developmental word knowledge.

4 Perspectives on Spelling Instruction

Incidental—spelling taught through exposure to words in meaningful reading and writing

- Spelling instruction unnecessary and undesirable
- Words for instruction should be gathered from broad authentic reading and writing
- Lessons are happenstance and are taught when opportunity presents itself
- Not supported by research

Rote Memorization—suggests that the English language is unpredictable and consists of random strings of letters that must be mastered through visual memory

- Themed spelling lists
  Related by concept, but not by phonology (sound), orthography (patterns), or morphology (meaning units)
- To promote memorization—students are assigned sentences, worksheets, write missed words 10 times each
- Weekly spelling tests
- Not supported by research

Generalization—suggest that English language is systematic, reliable, and predictable with some exceptions ------- Treasures basal program

Developmental—asserts that English language is based on a consistent, predictable orthography and morphology and should be taught systematically

WHAT IS WORD STUDY?

The difference between Word Study Instruction and a traditional spelling instruction
---Data drives instruction (Spelling Inventories)

- Categorizing
- Examining
- Activities that cause students to sort words and pictures by examining, discriminating, and making critical judgments about speech sounds, spelling patterns, and meanings.

ORTHOGRAPHIC DEVELOPMENTAL STAGES

Orthographic Stages – marked by broad, qualitative shifts in the types of spelling errors students make as well as the way students read words.

Moves from alphabet to pattern to meaning

Orthographic Stages	Corresponding Grade Levels	Reading Stages
• Emergent Stage	Pre K – Middle 1	• Emergent Reading
• Letter Name-Alphabetic Stage	K – Middle 2	• Beginning Reading
• Within Word Pattern Stage	Grade 1 to Middle 4	• Transitional Reading
• Syllables and Affixes Stage	Grades 3 -- 8	• Intermediate Reading
• Derivational Relations Stage	Grades 5 -- 12	• Advanced Reading

As students move through these stages, beginning with one-to-one correspondences between letters and sounds, to more difficult abstract relationships between letter patterns and sounds, to even more sophisticated relationships between meaning units (morphology) as they relate to sound and pattern.

Students do correctly—independent level of instruction
Students use, but confuse – instructional level of instruction
Absent in students' spelling—frustration level of instruction

OVERVIEW of WORD STUDY -- DVD (11 minutes)

Show Introduction and Word Sort Chapters from the *Words Their Way* DVD

NEXT SESSION…

Pre-assessment

- Spelling Inventory
- Qualitative Spelling Inventory

Bring 2 to 3 UNCORRECTED writing samples from different students

Day 2

ASSESSMENT

Observe students' writing and reading
Qualitative Spelling Inventories
Qualitative Spelling Checklist

OVERVIEW of WORD STUDY -- DVD (11 minutes)

INFORMAL ASSESSMENT

- Writing
    - Daily observations
    - Uncorrected writing samples provide information regarding literacy development

Caution: Do not rely solely on writing to assess literacy development.

Provides information about students' habits and dispositions

- Some students are anxious about the accuracy of their spelling and will only use words they know how to spell.
- Students may use classroom resources such as word walls, dictionaries, friends, therefore overestimating what they really know.
- Students may be concentrating on getting their ideas on paper and not paying attention to spelling, thus making excessive errors.
- Students may tend to write freely with little concern about accuracy and need reminders to use what they know.

- Reading

A conservative measure – just because students can read a word does not necessarily mean they can spell the words

- EX: Read 2 syllable words like shopping and bottle, but may spell them as *shoping* and *catel* (Exception: Early stages when students may be able to generate spellings they don't know how to read)

Reading errors, just like spelling errors, show teachers what students are using, but confusing

- EX 1: Student substitutes *bunny* for *rabbit* in the sentence: "The farmer saw a rabbit."

---beginning reader and early letter name-alphabetic speller
---uses picture to generate logical response, not knowledge about sound-symbol correspondence
TEACHER RESPONSE: Draw attention to the first sound. This teaches student to use his/her consonant knowledge

- EX 2: Student substitutes *growled* for *groaned* in the sentence: "Jason groaned when he missed the ball."

  ---further in development, transitional reader
  ---attending to several orthographic features of the word
  ---appears to use initial blend *gr, the vowel o,* and the *–ed* ending to find a word that fits the meaning of sentence
  TEACHER RESPONSE: Direct attention to *oa* pattern and ask him to try again based on the vowel knowledge the student is demonstrating

QUALITATIVE SPELLING INVENTORIES

- Lists of words chosen to represent a variety of spelling features or patterns at increasing levels of difficulty
- Assess students' abilities with key spelling features that relate to the different spelling stages
- Given like a spelling test, then analyzed
- Inventory combined with reading and writing observations, provide a general picture of a student's orthographic developmental level
- First developed by Edmund Henderson
- Provide information about students' reading – studies consistently show a relation between the spelling inventory and predicting reading achievement K-adult

SELECT AND ADMINISTER A SPELLING INVENTORY

Select

---based on grade level, adjusting to easier or harder inventories depending on range of achievement in the classroom

Spelling Inventories	**Grade Range**	**Developmental Range**
Primary Spelling Inventory	K-3	Emergent to late within word pattern
Elementary Spelling Inventory	1-6	Letter name to early derivational relations
Upper Level Spelling Inventory	5-12	Within word pattern to derivational relations

---key point – students must generate a number of errors for you to determine a spelling stage
---do not assess students at their frustration level

Administer

---20 – 30 minutes to administer
---explain why you are giving them this assessment
---whole class or small group

---pronounce each word naturally, once in isolation, again in a sentence, and then repeated in isolation
---know when to stop

Score

---score according to orthographic features
EX: when is spelled as *wen* --- gets points for correct short vowel and ending consonant even though word is spelled incorrectly
---use feature guides
---provides *qualitative* information regarding what a student knows and what he/she is ready to study next

---FEATURE GUIDES

- Begin by marking words right or wrong
- Write correct spellings next to the word if spelled incorrectly
- Calculate a raw sore or power score (number of words spelled correctly)
- Check off each feature of the word that is represented correctly in the columns to the right of the word
- Add the checks in each column and record the total score for that column at the bottom as a ratio of correct features to total possible features (Adjust as needed if the whole list was not tested over)
- Add total feature scores across the bottom and the total words spelled correctly
    - Use this score to rank order students and to compare individual growth over time

Common Confusions:

static reversal as in b or d in *bed*--record what student did, but give credit for the sound
kinetic reversals – letters are present but out of order give credit for vowels and consonants, no point for correct spelling
random strings of letters tacked on – give credit for what is represented correctly, no point for correct spelling

Analyze

---use feature guides to determine appropriate level of instruction
---instruction begins at the point where student makes two or more errors on a feature when looking at the feature columns from left to right
---determine a developmental stage

NEXT SESSION…

Pre-assessment

- Spelling Inventory
- Qualitative Spelling Inventory: (Bring 2 to 3 UNCORRECTED writing samples from different students)

Day 3

ORGANIZATION

Procedures – Model
Classroom Space/Materials
Predictable Routines
Schedules

Show – Classroom Organization -- DVD (5 minutes)

ACTIVITY

Participants create a visual representation of their classes based on Assessment/Feature Guides

PROCEDURES—Model with a word sort

- Word Sorts

  Teacher created or pulled from resource book
- Cutting Words Apart

  TIP: Prior to cutting words apart, teach students to quickly scribble over the backside of the paper in a color, different than their neighbors, to provide easy identification.
- Sorting Words into Categories

  TIP: Model categorization process
  --Small groups using the same cutout words students are using
  --Large groups using larger examples of cutout words students are using, document camera
- Storing Words for Later Use

  TIP: Envelope or plastic bags are good for storage. Occasionally, words are glued into a notebook, combined with other word sorts, or discarded.

CLASSROOM SPACE/MATERIALS

- Areas needed for group work, individual work, and partner work.
- Materials include: stopwatches for speed sorts, sound boards/Jolly Phonics cards, copy paper, word study notebooks, folders, game board materials, spinners/dice, student dictionaries, rhyming dictionaries, etymological dictionaries, homophone books, alphabet books, phonics readers, copied picture or word cards (if grade level appropriate)

PREDICTABLE ROUTINES

Word study instruction can occur as a part of…

Active Inquiry and Problem Solving

- Reading Groups – theoretical integrity – orthographic knowledge is central to both reading and writing
- Circle-Seat-Center Format – groupings of students
- Word Study Block – dedicated time for differentiated word study

Reading Groups

Day 1—Digging for words that follow the feature being introduced; record contributions on chart
Day 2 – Demonstrate a word sort and have students repeat sort
Day 3 – Additional word study activities and/or individual/partner work

Circle-Seat-Center Format—Separate from reading instruction

<table>
<tr><th></th><th>9:00 – 9:25</th><th>9:25 – 9:30</th><th>9:30 – 9:55</th><th>9:55 – 10:00</th><th>10:00 – 10:25</th><th></th></tr>
<tr><td>Group 1</td><td>Circle*</td><td rowspan="3">Evaluation and Break</td><td>Seat</td><td rowspan="3">Evaluation and Break</td><td>Literacy Centers</td><td rowspan="3">Evaluation and Break

Whole Class Activities</td></tr>
<tr><td>Group 2</td><td>Literacy Centers</td><td>Circle*</td><td>Seat</td></tr>
<tr><td>Group 3</td><td>Seat</td><td>Literacy Centers</td><td>Circle*</td></tr>
</table>

*Students grouped according to orthographic developmental levels
**Works well for a longer block of literacy instruction

Word Study Block

	Monday	Tuesday	Wednesday	Thursday	Friday
Lowest Group	Meet with teacher Sort a 2nd time at seats	Sort again and write sort for homework or independent practice	Partner Work	Word Hunts Speed Sorts, Blind Sort and/or writing sort for homework or independent work	Assessment Games
Middle Group		Meet with teacher Sort and write Sort as homework and/or independent practice	Partner Work	Word Hunts Speed Sorts, Blind Sort and/or writing sort for homework or independent work	Assessment Games
High Group		Sort words independently Write sort and reflect	Meet with Teacher Partner work if time permits	Word Hunts Speed Sorts, Blind Sort and/or writing sort for homework or independent work	Assessment Games

*Works well if teacher prefers for every student doing same task at the same time, but allows for differentiation

Keep in mind…

---Routines will save planning time and ease transitions

---Schedule group work time with teacher – same developmental level – stimulate thinking and further understanding

---Keep it short – intro lessons 15-20 minutes, but subsequent days 10 minutes – students should have time to devote the majority of their attention and time to reading and writing for meaningful purposes

---Schedule time for independent and partner sorts – working together students more easily form generalizations and gather orthographic support for their new insights

NEXT SESSION…

- Teacher-Directed Lesson Plan
- Word Sorts
- Ten Principles of Word Study Instruction

Day 4

EXPLICIT WORD STUDY INSTRUCTION

Weekly Word Study Routines
Instructional Essentials
Instructional Techniques
Word Study Notebook Activities
Word Study Games

WORD STUDY -- DVD

WEEKLY WORD STUDY ROUTINES -- INSTRUCTIONAL ESSENTIALS

Routines followed up with independent work
Multiple opportunities to work with words in varied activities

INSTRUCTIONAL TECHNIQUES

5 Instructional Essentials to ALWAYS include:

- Teacher-Modeled Sort
- Daily Student Sorting
- Writing Sort
- Word Hunts
- Word Study Notebooks

WORD STUDY ACTIVITIES

Hunts
Notebook
Sorts

WORD STUDY GAMES

Have participants work with the various word study games to become familiar with the game rules and expectations.

Appendix B: Elementary Spelling Inventory and Feature Guide

Elementary Spelling Inventory (ESI)

The Elementary Spelling Inventory (ESI) covers more stages than the PSI. It can be offered as early as first grade, particularly if a school system wants to use the same inventory across the elementary grades. The 25 words are ordered by difficulty to sample features of the letter name–alphabetic to derivational relations stages. Call out enough words so that you have at least five or six misspelled words to analyze. If any students spell more than 20 words correctly, use the Upper-Level Spelling Inventory.

1.	bed	I hopped out of bed this morning. *bed*
2.	ship	The ship sailed around the island. *ship*
3.	when	When will you come back? *when*
4.	lump	He had a lump on his head after he fell. *lump*
5.	float	I can float on the water with my new raft. *float*
6.	train	I rode the train to the next town. *train*
7.	place	I found a new place to put my books. *place*
8.	drive	I learned to drive a car. *drive*
9.	bright	The light is very bright. *bright*
10.	shopping	She went shopping for new shoes. *shopping*
11.	spoil	The food will spoil if it is not kept cool. *spoil*
12.	serving	The restaurant is serving dinner tonight. *serving*
13.	chewed	The dog chewed up my favorite sweater yesterday. *chewed*
14.	carries	She carries apples in her basket. *carries*
15.	marched	We marched in the parade. *marched*
16.	shower	The shower in the bathroom was very hot. *shower*
17.	bottle	The bottle broke into pieces on the tile floor. *bottle*
18.	favor	He did his brother a favor by taking out the trash. *favor*
19.	ripen	The fruit will ripen over the next few days. *ripen*
20.	cellar	I went down to the cellar for the can of paint. *cellar*
21.	pleasure	It was a pleasure to listen to the choir sing. *pleasure*
22.	fortunate	It was fortunate that the driver had snow tires. *fortunate*
23.	confident	I am confident that we can win the game. *confident*
24.	civilize	They wanted to civilize the forest people. *civilize*
25.	opposition	The coach said the opposition would be tough. *opposition*

Words Their Way Elementary Spelling Inventory Feature Guide

Student's Name _____ Teacher _____ Grade _____ Date _____

Words Spelled Correctly: _____ / 25 *Feature Points:* _____ / 62 *Total:* _____ / 87 *Spelling Stage:* _____

SPELLING STAGES →	EMERGENT		LETTER NAME–ALPHABETIC			WITHIN WORD PATTERN			SYLLABLES AND AFFIXES			DERIVATIONAL RELATIONS			
	LATE	EARLY	MIDDLE	LATE		EARLY	MIDDLE	LATE	EARLY	MIDDLE	LATE	EARLY	MIDDLE		
Features →	**Consonants Initial**	**Final**	**Short Vowels**	**Digraphs**	**Blends**	**Common Long Vowels**	**Other Vowels**	**Inflected Endings**	**Syllable Junctures**	**Unaccented Final Syllables**		**Harder Suffixes**	**Bases or Roots**	**Feature Points**	**Words Spelled Correctly**
1. bed	b	d	e												
2. ship		p	i	sh											
3. when			e	wh											
4. lump	l		u		mp										
5. float		t			fl	oa									
6. train		n			tr	ai									
7. place					pl	a-e									
8. drive		v			dr	i-e									
9. bright					br	igh									
10. shopping			o	sh				pping							
11. spoil					sp		oi								
12. serving							er	ving							
13. chewed				ch			ew	ed							
14. carries							ar	ies	rr						
15. marched				ch			ar	ed							
16. shower				sh			ow			er					
17. bottle									tt	le					
18. favor									v	or					
19. ripen									p	en					
20. cellar									ll	ar					
21. pleasure												ure	pleas		
22. fortunate							or					ate	fortun		
23. confident												ent	confid		
24. civilize												ize	civil		
25. opposition												tion	pos		
Totals		/ 7	/ 5	/ 6	/ 7	/ 5	/ 7	/ 5	/ 5	/ 5		/ 5	/ 5	/ 62	/ 25

Appendix C: Baker University Proposal for Research

BAKER UNIVERSITY

SCHOOL OF EDUCATION
GRADUATE DEPARTMENT

Date: May 17, 2011
IRB PROTOCOL NUMBER _____
(IRB USE ONLY)

IRB REQUEST
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. Research Investigator(s) (Students must list faculty sponsor first)

Department(s) **School of Education Graduate Department**

Name	Signature	
1. Dr. Patricia Bandre		Major Advisor
2. Margaret Waterman		Research Analyst
3.		University Committee Member
4.		External Committee Member

Principal Investigator: Rebecca L. Kroenke
Phone: 816-550-7630
Email:
Mailing address: 8011 NE 110th Terr
Kansas City, MO 64157

Rebecca L. Kroenke

Faculty sponsor: Dr. Patricia Bandre
Phone: 913-344-1233
Email: Patricia.Bandre@bakeru.edu
Expected Category of Review: __X__Exempt ____Expedited ____Full

II: Protocol Title

The Effects of Explicit Word Study Instruction on Fourth Grade Reading Accuracy, Reading Comprehension, Reading Fluency, and Everyday Spelling Accuracy

Summary
The following summary must accompany the proposal. Be specific about exactly what participants will experience, and about the protections that have been included to safeguard participants from harm. Careful attention to the following may help facilitate the review process:

In a sentence or two, please describe the background and purpose of the research.

Many educators and parents attribute reading success or failure to spelling (Juel, 1988). Traditionally, students memorize a list of words for a Friday spelling test. While educators recognize this as common practice, it does not translate into what some educators consider as best practice (Bear, Invernizzi, Templeton, & Johnston, 2008; Ganske, 2008). Knowledge is not gained through memorization, rather it is gained through manipulation and exploration of the language (Bear et al, 2008). Explicit word study instruction, one component of a balanced literacy program, helps students to visually discriminate between word parts and words, allowing them to add to their literacy knowledge (Bear, Invernizzi, Templeton, & Johnston, 2008). Meeting students at their developmental level and moving them forward through explicit word study instruction will further students' understanding of the logic of spelling (Gentry, 2004).

The purpose of this study is to examine the effects of explicit, developmentally appropriate orthography instruction (word study) on the reading accuracy, reading comprehension, reading fluency, and everyday spelling accuracy of fourth grade students.

Briefly describe each condition or manipulation to be included within the study.

The independent variable for this study will be the type of spelling instruction provided to the Midwestern suburban districts' 4th grade participants. Students in the test group will receive explicit word study instruction as outlined in *Words Their Way* (Bear, Invernizzi, Templeton, & Johnston, 2008). Control group students will receive traditional spelling instruction based on the board approved basal reading, writing, spelling program *Treasures* (McGraw Hill, 2007).

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.
Will the subjects encounter the risk of psychological, social, physical, or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

There are four dependent variables for this study: a) orthography knowledge as measured by the Elementary Spelling Inventory (Bear et al, 2008), b) reading comprehension as measured by Acuity Predictive Benchmark Assessment, c) oral reading fluency as measured by the STAR Estimated Oral Reading Fluency, and d) every day accuracy of spelling as measured by a written sample using predetermined writing prompts.

Security prevents access to the Acuity Predictive Benchmark Test and the STAR Estimated Oral Reading Fluency passages. A sample of the ESI is attached, as well as examples of previous years' writing prompts. The writing prompts change yearly and are not available until the assessed quarter.

Will any stress to subjects be involved? If so, please describe.

Participants in this study are not expected to experience stress; however, in testing situations it is natural for some students to experience varying degrees of stress.

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

The subjects will not be deceived or misled in any way; therefore, a debriefing session will not be necessary.

Will there be a request for information that subjects might consider to be personal or sensitive? If so, please include a description.

No portion of this study will ask for information subjects might consider personal or sensitive.

Will the subjects be presented with materials that might be considered to be offensive, threatening, or degrading? If so, please describe.

No portion of this study will include information that may be considered offensive, threatening, or degrading.

Approximately how much time will be demanded of each subject?

All assessments are a part of the regular school program, except for the Elementary Spelling Inventory. This will take approximately 15 minutes to administer to the control group.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

The subjects of this study include students enrolled in grade four at four elementary schools in a Midwestern suburban district. As the Board adopted curriculum requires students to receive spelling instruction as a portion of a balanced literacy program, students will not be asked to complete any additional work. Furthermore, the assessments being used are Board approved assessments and are part of the district assessment schedule, with the exception of ESI for the control group.

What steps will be taken to ensure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

Participation is not voluntary because spelling is part of the students' daily instruction. No inducements will be offered to the participants.

How will you ensure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

No consent will be needed as this will be a portion of daily instruction and assessments are given as a part of the Midwestern suburban district's assessment schedule.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

Scores from the Acuity Predictive Benchmark Assessment and the STAR Reading Assessment are archived in the district's assessment database. However, the scores from the ESI and the written language sample will not be part of any permanent record.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

During the study, records will be kept regarding a subject's participation or lack thereof. However, once the study is complete, their participation or lack thereof, will not be entered into any form of permanent record in which supervisors, teachers, or employers would access.

What steps will be taken to ensure the confidentiality of the data?

Students will be assigned a code based on the teacher's last name and building code. Scores for Predictive Benchmark Assessment and the STAR Estimated Oral Reading Fluency, are accessed electronically and require administrative passwords. The ESI scores and the writing samples will be kept in a locked filing cabinet and can only be accessed by the researcher. Once study is complete, all hard copies of data will be shredded.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

No risks have been identified in conjunction with this study. The benefits of this study may increase students' reading accuracy, reading comprehension, reading fluency, and everyday spelling accuracy.
Results of this study may also impact curricular decisions in the Midwestern suburban school district.

Will any data from files or archival data be used? If so, please describe.

Data for this study will be retrieved from the Acuity database and the STAR database. Information regarding student population and demographic makeup will be retrieved from the Missouri Department of Elementary and Secondary Education (DESE) website.

Appendix D: Baker University IRB Approval Letter

July 13, 2011

SCHOOL OF EDUCATION
Baldwin City, Overland Park, Wichita, Topeka, Kansas City and Lee's Summit

Rebecca L. Kroenke
8011 NE 110th Terrace
Kansas City, MO 64157

BAKER UNIVERSITY
Own Confidence

Dear Ms. Kroenke:

The Baker University IRB has reviewed your research project application (M-0115-0517-0713-G) and approved this project under Exempt Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

The Baker University IRB requires that your consent form must include the date of approval and expiration date (one year from today). Please be aware of the following:

1. At designated intervals (usually annually) until the project is completed, a Project Status Report must be returned to the IRB.
2. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
3. Notify the OIR about any new investigators not named in original application.
4. Any injury to a subject because of the research procedure must be reported to the IRB Chair or representative immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform Office of Institutional Research (OIR) or myself when this project is terminated. As noted above, you must also provide OIR with an annual status report and receive approval for maintaining your status. If your project receives funding which requests an annual update approval, you must request this from the IRB one month prior to the annual update. Thanks for your cooperation. If you have any questions, please contact me.

Sincerely,

Carolyn Doolittle, EdD
Chair, Baker University IRB

Appendix E: Suburban School District IRB Proposal and Approval

July 19, 2011

Dear Ms. Kroenke:

Per School District Board Policy, external agencies or individuals desiring to conduct research studies involving either students or staff members during the school day must submit a written prospectus to the Superintendent, or designee, for approval prior to initiation of the study. To be approved, all such research proposals must demonstrate that the projected findings will have value to either the District as a whole or to a unit within the District, and not be unduly disruptive or time consuming to the normal educational process.

The School District recognizes the importance of research as a means of improving the instructional program for the District's students and also recognizes the need to monitor and control the amount of time and energy expended by both staff and students on research projects.

I have had the opportunity to review the prospectus for the research project entitled *The Effects of Explicit Word Study Instruction on Fourth Grade Reading Accuracy, Reading Comprehension, Reading Fluency, and Everyday Spelling Accuracy* as well as speak to the principal at the school regarding the project. It is my pleasure to approve the project *The Effects of Explicit Word Study Instruction on Fourth Grade Reading Accuracy, Reading Comprehension, Reading Fluency, and Everyday Spelling Accuracy* and the use of relevant School District data, classrooms and students within the project. I find the project to have value to the district, support the goals of the district, and not be unduly disruptive or time consuming to the educational process.

Please contact me if you have any questions.

Cordially,

Director of Research, Evaluation, & Assessment
School District

Research Checklist and Approval

Date: _July 19, 2011_____

Submitted to: Director of Research, Evaluation & Assessment

Submitted by: __Rebecca L. Kroenke_____

Research Proposal Title: The Effects of Explicit Word Study Instruction on Fourth Grade Reading Accuracy, Reading Comprehension, Reading Fluency, and Everyday Spelling Accuracy

Principal Investigator(s):__Rebecca L. Kroenke _____

Checklist

- ρ Completed "Application to Conduct Research in PHSD"
- ☐ Copy of "Informed consent" letter to study population/parents (Not Applicable)
- ρ Copies of measurement instruments
- ρ Approval from university human subjects committee (IRB) if applicable
- ρ Three (3) copies of your complete application package (Emailed Document)

Approval of this research is contingent on adherence to district procedures as outlined in the document entitled "Application to Conduct Research" and the information provided with the application. The district must be notified of any substantive changes to the information contained in the application. The district reserves the right to withdraw approval of research if the research is deemed to no longer be in the best interests of the students, staff, or the district.

Research Application: Approved Denied Date: 7-19-2011

Signatures

Director of Research, Evaluation, and Assessment

N/A
Principal

Principal

Principal

Name	Organization	Department
Rebecca L. Kroenke		Instructional Coach
Address	City	State Zip Code
8011 NE 110th Terr	Kansas City	MO 64157
Phone Number	Fax Number	E-mail
816.550.7639		kroenkeb@ .k12.mo.us

I have read and understand the process of application to conduct research in th District. I also verify that the information provided in this application is accurate to the best of my knowledge.

_____

Signature Date

Is this study part of your work for a degree?
X Yes No
If Yes, complete the following:
Ph.D. X Ed.D. M.A./M.S
Undergraduate Other
University or College__Baker University___
Date of IRB Approval (or date of application if pending)__July 13, 2011_
Advisor's Name_Dr. Patricia Bandre
Advisor's Telephone Number 913-344-1233

Attach a concise, yet thorough, response to each of the following items.

1) **Title and purpose of study**

2) **Timeline**

When do you plan to start your study? What is the estimated total length of time?

3) **Benefits to the district**

How will this study benefit the ?

4) **Research Design Summary**

Give specific information on the methods to be used during the course of the study. Please include your research questions, instruments, sampling and data collection methodologies, and proposed analyses. Samples of instruments may include survey questions, observation forms, and interview questions. Finally, describe any tasks students or staff will be asked to complete. Describe procedures you will use to secure and acknowledge informed consent of all participants, including active or passive consent. If passive, please provide a rationale. Please attach copies of any letters. Outline how subjects will be identified and criteria used for recruitment, who will make the initial contact with subjects, and whether or not inducements will be used to secure participation.

5) **Assurance of anonymity o students & staff**

How will the anonymity of students and staff be protected?

6) **Risks of the research**

List any known risks of the proposed investigation to students, staff, or the district.

7) **District involvement**

What request are you making of the and the Director of Research, Evaluation, and Assessment? Specify numbers of students and staff to be involved, length of time, and time line for completion of your investigation.

8) **Funding Sources**

9) **IRB approval**

If applicable, give the date and copy of IRB approval letter, or application if IRB review is in process. will not allow study to begin until we have an approval letter on file.

1) Title and purpose of study

Title: The Effects of Explicit Word Study Instruction on Fourth Grade Reading Accuracy, Reading Comprehension, Reading Fluency, and Everyday Spelling Accuracy

Purpose: Many educators and parents attribute reading success or failure to spelling (Juel, 1988). Traditionally, students memorize a list of words for a Friday spelling test. While educators recognize this as common practice, it does not translate into what some educators consider as best practice (Bear, Invernizzi, Templeton, & Johnston, 2008; Ganske, 2008). Knowledge is not gained through memorization, rather it is gained through manipulation and exploration of the language (Bear et al, 2008). Explicit word study instruction, one component of a balanced literacy program, helps students to visually discriminate between word parts and words, allowing them to add to their literacy knowledge (Bear, Invernizzi, Templeton, & Johnston, 2008). Meeting students at their developmental level and moving them forward through explicit word study instruction will further students' understanding of the logic of spelling (Gentry, 2004).

The purpose of this study is to examine the effects of explicit, developmentally appropriate orthography instruction (word study) on the reading accuracy, reading comprehension, reading fluency, and everyday spelling accuracy of fourth grade students.

2) Timeline

The study will begin in August 2011 and will conclude upon the completion of the 3rd testing window as directed by the district assessment schedule. It is estimated that the study will last approximately 8 months.

3) Benefits to the district

In determining the effect of word study on reading accuracy, comprehension, and fluency, as well as everyday spelling accuracy, the _____ District would benefit in the following areas: 1) Providing differentiated instruction to students, 2) Utilizing a research-based teaching strategy to effectively teach word knowledge, 3) Increasing stakeholder satisfaction regarding spelling instruction, and 4) Impacting future curricular decisions.

4) Research Design Summary

Research Questions

To what extent is there a difference in change in the pretest and posttest scores (Change Score = Post – Pre) *Words Their Way* Elementary Spelling Inventory between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum?

To what extent is there a difference in change in the pretest Acuity Predictive A Benchmark Assessment) and the posttest (Acuity Predictive C Benchmark Assessment) communication arts comprehension scores (Change Score = Post – Pre) between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum?

To what extent is there a difference in change in the pretest and posttest scores (Change Score = Post – Pre) of the STAR Estimated Oral Reading Fluency (ORF) rating between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum?

To what extent is there a difference in change in the pretest and posttest percentage of correctly spelled words (Change Score = Post – Pre) in the timed writing samples, between students receiving explicit word study instruction and students receiving traditional spelling instruction through the district's adopted basal curriculum?

The independent variable for this study will be the type of spelling instruction provided to the Midwestern suburban districts' 4th grade participants. Students in the test group will receive explicit word study instruction as outlined in *Words Their Way* (Bear, Invernizzi, Templeton, & Johnston, 2008). Control group students will receive traditional spelling instruction based on the board approved basal reading, writing, spelling program *Treasures* (McGraw Hill, 2007).

Measures Used During the Study:

There are four dependent variables for this study: a) orthography knowledge as measured by the Elementary Spelling Inventory (Bear et al, 2008), b) reading comprehension as measured by Acuity Predictive Benchmark Assessment, c) oral reading fluency as measured by the STAR Estimated Oral Reading Fluency, and d) every day accuracy of spelling as measured by a written sample using predetermined writing prompts.

Subject Participation

The subjects of this study include students enrolled in grade four at four elementary schools in the District. As the Board adopted curriculum requires students to receive spelling instruction as a portion of a balanced literacy program, students will not be asked to complete any additional work. Furthermore, the assessments being used are Board approved assessments and are part of the district assessment schedule, with the exception of ESI for the control group.

Subject Identification

Students will be assigned a code based on the teacher's last name and building code. Scores for Predictive Benchmark Assessment and the STAR Estimated Oral Reading Fluency, are

accessed electronically and require administrative passwords. The ESI scores and the writing samples will be kept in a locked filing cabinet and can only be accessed by the researcher. Once study is complete, all hard copies of data will be shredded.

5) Assurance of anonymity of PHSD students & staff

Within the study, no child will be identified by name or identifying marker. Teachers will be referred to as Teacher A, B, C, etc. The district will be referred to as a Midwestern suburban school district.

6) Risks of the research

No risks have been identified in conjunction with this study. Rather benefits of this study may increase students' reading accuracy, reading comprehension, reading fluency, and everyday spelling accuracy.

7) District involvement

The number of students involved in this study is approximately 300 students and 12 teachers. The study will last for approximately 8 months, beginning in August 2011 and ending April 2012. There is no foreseeable need for more than guidance provided to the principle investigator by the Director of Research, Evaluation, and Assessment.

8) Funding Sources

This study requires no funding as it is part of the existing instructional resources and literacy framework.

9) IRB approval

IRB approval was granted on July 13, 2011.