THE EFFECTIVENESS OF HIGH FREQUENCY WORD LIST INSTRUCTION ON STAR READING TEST SCORES

by

Michael Andrew Foster

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

The purpose of this quantitative, quasi-experimental study was to test the theory of using high frequency word list (HFWL)-based instruction when teaching beginning reading instruction. This study compared the reading fluency changes of eight classes across three different grades containing 115 students over 5 months as measured by the Standardized Test for the Assessment in Reading (STAR) when intervention students are given identical instruction using different popular HFWLs. One control group received no such intervention. The Fry HFWL was used. The resulting scores were analyzed using an independent-samples *t* test. The comparisons determined the effectiveness of teaching beginning reading using the addition of these types of lists into daily instruction. The importance of this study is to strengthen the foundation upon which reading instructors base their daily lesson plans, specifically what word lists teachers use, as well as their course curriculum and scope and sequence of their instruction. No statistical differences were found between the experimental instruction group HFWL-based instruction in beginning reading and instruction based on other word lists. Further research needs to be conducted to uncover possible benefits with other populations, as well as to determine if other strategies using HFWL-based reading instruction would prove effective.

Keywords: beginning reading education, high frequency word list

Dedication

The manuscript is dedicated to all who helped make this dream into a reality.

I give thanks to my personal Savior Jesus Christ. With him, all things are possible.

Acknowledgments

I would like to acknowledge the assistance of Dr. Michelle Barthlow, Dr. David Minsky, Mr. Alan Perkins, Dr. David Gholston, Dr. Christopher Clark, the school district, the students within, and my loving wife and family. Without them, none of this would have been possible.

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List of Abbreviations

High Frequency Word List (HFWL)

Response to Intervention (RtI)

Standardized Test for the Assessment in Reading (STAR)[1]

[1] This meaning is no longer maintained, as the company, Renaissance Learning, Inc., has created STAR assessments for skills in domains other than reading. Currently, STAR may refer to any of the family of Renaissance Learning assessments typically given to elementary and secondary students.

CHAPTER ONE: INTRODUCTION

Overview

Across the United States, in both public and private school settings, educators often use word lists to plan and provide reading instruction. This is especially true of teachers who are challenged with the task of teaching the very beginning readers the basics and foundations of reading (Dinnsen, Green, Morrisette, & Gierut, 2011). While the basic scope, sequence, and overall curriculum for reading teachers is most often provided at the district or state level, most experienced teachers will use a wide variety of strategies to ensure their pupils' success. These teachers have a multitude of time-tested and research-based instructional options at their disposal, including the option of sight word instruction.

Background

Scott Paris (2005) stated, "Learning to read is one of the greatest accomplishments in childhood because it is the foundation for learning and academic achievement" (p. 184). It is this foundation for learning that drives many in education to try their very best to teach and prepare their students for a successful future. However, reading instruction effectiveness can be hard to prove. Amendum, Conradi, and Hiebert (2017) researched several studies and found little or no connection between text difficulty, reading comprehension, and reader fluency when studying beginning readers. Mesmer, Cunningham, and Hiebert (2012) suggested that most of the types of texts currently used for beginning reading instruction reflect "mandates of state legislatures and advocacy of special interest groups more than evidence from theory or research" (p.

54). Balu et al. (2015) stated that no definitive word recognition percentage exists when trying to measure beginning reader accuracy and fluency. Most schools use a response to intervention (RtI) program (Balu et al., 2015), but these RtI schools also have trouble demonstrating a best practices model. Balu et al. stated that reading interventions may even have a negative impact in certain lower grades. Correlations of beginning reading strategies and subsequent reading performance have been the bases for recommendations that perhaps the best approaches for raising children's reading levels is to improve prereading skills before Kindergarten (e.g., Claessens, Duncan, & Engel, 2009; Lonigan & Shanahan, 2009).

Developing a large vocabulary has been linked to greater academic success (Barry, 2008) and higher overall reading achievement (Graves, Brunetti, & Salter, 1982; Stahl & Fairbanks, 1996), as well as improving prereading abilities (National Reading Panel [NRP], 2000a). Research has indicated that teaching beginning reading lessons based on specific and systematic word lists and word-learning strategies can build students' vocabularies and improve the comprehension of material that contains the list words (McKeown, Beck, Omanson, & Pople, 1985; Stahl & Fairbanks, 1986).

Most educators have agreed with reading researchers that vocabulary and sight word development is of high importance to improving reading comprehension (Anderson & Freebody, 1981; Baumann, Kame'enui, & Ask, 2003). Sight words are lists of words that are often difficult for students to decode using common rules of the English language. The words may have irregular letter patterns and may often present a challenge to students engaged in beginning reading instruction. Sight word lists are typically taught in rote memory fashion or in conjunction with textual clues and through grouped pattern

repetition. Sight word lists are developed by teachers in many ways, including rhyming words, words found around the home, and number words. Supporting research has shown merit in several forms of list development, and there is well-established historical and anecdotal evidence proving these lists. Educators often have their favorite way of teaching vocabulary sight words. Although they may not have conducted formal research regarding their own lists, they stand the test of time. Teachers are usually interested in improving their students' success; they know that when something does not work, they need to change it.

Some research has shown, however, that the most effective way to use sight words is to use a high frequency word list (HFWL; Morrisette & Gierut, 2002; Storkel & Morrisette, 2002). HFWLs are lists of words that appear most frequently in a given body of literature and are sequentially ordered in the list with the most frequently found words listed first in order of prevalence. Students learn these words by sight and add them to their vocabulary. These words are not usually sounded out through phonics, as they are instantly recognizable to a student once committed to memory. As children learn more words and expand their vocabularies, they develop more sophisticated language. Stahl and Fairbanks (2003) argued that this language sophistication contributes to improved comprehension.

HFWLs are developed through the construction of a corpus linguistic, or body of words, from the chosen source material. Typically, this source material is a set of textbooks adopted by a district or a state educational body. Several of the classic lists were based on old primers or instructional books and provided to students and written by major publishers of educational materials, such as Scott Forseman and Harcourt. After

the corpus linguistic is compiled, the words are typically ranked in order of the amount of times they appear in the body of literature. Teachers are usually advised to teach the words with the highest frequency first, as these make up the most common words in the English Language (Gierut & Hulse, 2010).

Perhaps the most common first sight word is a child's given name. Children often learn to read and recognize their own name before they have any understanding of reading. Even before children can read, they often can recognize words and symbols they see frequently in the world around them. McAlister and Cornwell (2010) showed that 80% of nonreading children between the ages of 3 and 5 were able to recognize Toyota from its brand logo, and over 90% of children tested could recognize McDonalds from the golden arches symbol.

Some research has suggested that even animals can learn to recognize words. In a recent study by Grangier, Dufau, Montant, Ziegler, and Fagot (2012), baboons were challenged with learning to recognize four-letter words in exchange for rewards. While the baboons could not actually read, they learned to determine the difference between real English words and nonsensical ones with one baboon learning over 300 different words. The baboons also learned to remember the words, even after thousands of trials. Grangier et al. suggested that that animals were learning to process combinations of letters in much the same way that human children begin reading.

As Dolch (1948) and later Fry (1989) and others have postulated, HFWLs can assist students in learning the most common words they would typically experience—not just in print but in social interaction with others. The theory put forth in the current

research is that when students are exposed to HFWL instruction on a regular basis, their reading scores improve.

Beginning readers are often at a distinct advantage when they learn to recognize and, therefore, read sight words occurring most often in familiar texts such as those included on the Dolch and Fry word lists (McGuinness, 2004). According to the NRP (2000b), when children have printed words in their oral vocabulary, they can more easily and quickly map sounds to letters, read words fluently, and understand them—thus comprehending what they are reading. If these words are not in their oral vocabulary, children will have difficulty reading the words and their comprehension is hindered (author, year, p. 12).

Many HFWLs have been undertaken in the past 100 years. Only two stand out in major popularity with elementary reading teachers—Dolch and Fry. The Dolch word list is a list of common words that was originally compiled by Edward William Dolch and published in 1948 in his book *Problems in Reading*. Dolch constructed his list based on children's books of the period and chose 220 service words he felt children needed to recognize to achieve fluency and automaticity in reading. Dr. Seuss' (1956) well-known book *The Cat in the Hat*, was written entirely from words found on the Dolch word list. These types of books often provide students with their first opportunity to engage in successful sight word reading.

Dr. Edward Fry developed his first sight word list in 1982 using much the same process, although his corpus was larger and primarily based on textbooks used in elementary schools across the United States. In 1998, Fry took Dolch's research to a new level with the publication of his book, *1,000 Instant Words*. Fry compiled this updated

list of common sight words from new textbook sources. Later, Fry and Kress (2006) published *The Reading Teacher's Book of Lists*, offers educators an extensive compilation of various word lists grouped in several different ways. Fry and Kress discovered that only 25 words comprise almost 35% of all published work for children and adults alike. The first 100 words in their list are commonly used in almost 50% of all written material.

The Saxon phonics word list was developed in 1999 as the Saxon Phonics Intervention Program and was published by Saxon, with revisions, almost every year since. Lorna Simmons was the original Saxon phonics K-2 program author, as well as the author of the updated Saxon Phonics, Spelling K-3, and Phonics Intervention. Simmons originally developed the program to assist her son and students in her elementary school class; as other teachers began requesting her materials, she partnered with Saxon Publishers to develop a formal phonics-based reading program to include a HFWL of her own (Baumann, 2011).

Today, teachers may question whether the lists developed 25-60 years ago are still relevant to the literature elementary students are reading. There have been no major studies based solely on the comparison of Saxon, Fry, and Dolch lists and no major HFWLs developed at all since Fry's in 1982 that have been based on systematic analysis of a corpus of literature. Although some minor studies have been completed in the past few years, the process used was based on the classic Fry and Dolch model, using textbooks and spreading the corpus across Grades 1 through 12, although 12th-graders are not typically beginning readers. Saxon bases its list on the Dolch model, along with subjective additions from its writers (Gierut & Morrisette, 2011).

Not only has there been no major progress in HFWL development, there are also no current studies on their effectiveness in teaching beginning reading. In fact, there has been some research to the contrary. In research completed by Balu et al. (2015), Bender and Larkin (2003), Blackwell-Bullock, Invernizzi, Drake, and Howell (2009), and Lonigan and Shanahan (2009), there have been appreciable points made that rote memorization and word list-based instruction is ineffective. In many schools, the main style of teaching sight words is through a weekly vocabulary word list. Teachers distribute the list on Monday and test the list on Friday. However, this style is often not conducive to learning for beginning readers. Rote memorization of words and definitions is ineffective and has little residual benefit over long-term studies (Dixon, Kameenui, & Carine, 1987).

Many studies have shown that teachers can positively influence vocabulary acquisition (Baumann et al., 2003; Blachowicz & Fisher, 2000; NRP, 2000a, 2000b). There remains, however, the question: Is this valuable vocabulary instruction occurring with regularity in America's schools? Often the vocabulary lessons in the early elementary school setting do not embody true research-based ideas that can significantly improve vocabulary and comprehension (Beck, McKeown, & Kucan, 2002). The current research is based on the student's zone of proximal development (ZPD) theory and symbolic function (Piaget, 1967; Vygotsky, 1978). These theories in general describe how learning is based on students first associating symbols with physical things in their world, and then, through the aid of a teacher or parent, growing into an understanding of reading the printed word. The words that students are most likely to be exposed to in everyday language usage will end up on a HFWL; these words form the basis of language

skills. Clearly, there is a need for experimental research to determine if teaching from HFWLs is effective for the young reader. The current research may be immediately applicable to beginning reading teachers around the nation.

This research was conducted in a quasi-experimental design due to the inappropriateness of randomly assigning individual students to learning groups without the framework of a normal classroom and educational setting. Quasi-experimental studies are commonly used within the educational realm (Gall, Gall, & Borg, 2007) and are most appropriate in this research. The information garnered from this study would be immediately applicable to all teachers and service providers who engage in beginning reading instruction and who use current children's literature as a foundation for their reading lesson planning. The problem is that most educators who teach beginning reading develop both reading and spelling lessons based on HFWLs, but there is little evidence proving if these lists can improve test scores. This study used the Standardized Test for the Assessment in Reading (STAR). STAR testing is a CLOZE type of testing used to determine the overall effectiveness of both teachers and programs. There is a need for research studying the effectiveness of educational methods based on these lists, and they should be tested in easy reading practice trials to prove to teachers and other stakeholders the worthiness of teaching from HFWLs.

Problem Statement

Educators across the country who engage in teaching beginning reading skills often develop these lessons based on HFWLs, despite there being little current research showing the effectiveness of these interventions, including the ways these word lists are used by learners while engaging in reading tasks (Guerrettaz & Johnston, 2013). Hiebert

and Fisher (2016) completed a large study that showed no statistical significance in the research done on hundreds of California first-graders who were given several different reading interventions, but this research did not include HFWLs. Another group of researchers studied several reading interventions, again leaving out HFWLs, and found they did not facilitate literacy acquisition for any students (Bigelow, 2011; Bigelow & King, 2014, 2016). Parmentier, Comesaña, and Soares (2016) completed an exhaustive study of HFWL-based instruction and found some limited advantages but limited their research to languages other than English. Overall effectiveness of teaching from HFWLs has not been fully researched.

There has been little recent, formal comparisons of the effectiveness of teaching methods or lesson strategies based on HFWLs for Kindergarten through second-grade readers as compared to teaching methods without the use of HFWLs. The current quantitative research investigates whether or not two similar groups of regular elementary school students in Grades K-2 will perform with similar results on the STAR Reading test when one group of students is given daily beginning reading instruction based on HFWLs and the other group is given similar instruction based of the standard curriculum.

The current study's results address the literature gap concerning HFWL instruction and its effectiveness for beginning readers in terms of STAR Reading test performance. The STAR Reading test was initially introduced in 1996. Although Fry tested the effectiveness of his word list in 2001, he did not use the STAR to prove his theories. Sitton (1996) also tested the effectiveness of their own lists but also did not incorporate the STAR. STAR testing is essential in this research due to the great regularity and frequency this instrument is used in America to measure reading progress

in early education (Betts & McBride, 2007). The problem is that these researchers showed the STAR Reading test is effective at measuring reading ability, but it has not been used to measure HFWL-based instruction.

Purpose Statement

The purpose of this quantitative, quasi-experimental study was to test the theory of using HFWL-based instruction when teaching beginning reading instruction. The STAR Reading test was used, comparing beginning and end of year scores between control and experimental groups. The quantitative, quasi-experimental research approach was chosen to test the possible connection, if any, between STAR Reading test scores and added beginning reading instruction based on HFWL. The independent variable of HFWL-based instruction was compared to the dependent variable of STAR Reading test scores that all students within these sample and control groups took at both the beginning of the study and at the end following the semester schedule of the school district. The research and control populations were drawn from Kindergarten, first-grade, and second-grade classes in the Madison County, Alabama school system. This population consists of a wide range of socioeconomic levels, as well as a broad racial, religious, and political demographics.

Significance of the Study

This study addresses the gap in the literature regarding the effectiveness of teaching beginning reading based on HFWL as measured by the STAR Reading test. In 2016, Hayes concluded that sight word instruction alone is not beneficial without other literacy instruction, although it did improve students' overall reading abilities and confidence in reading. Griffin and Joseph (2015) and Griffin and Murtagh (2015) both

concluded that short duration HFWL-based interventions could be helpful. Musti-Rao, Lo, and Plati (2015) also found increased reading scores when using Apple iPads to teach sight words to first-graders using percentage of word mastery as a standard measurement.

The results of the current research will contribute to the results of Dolch (1948), Sitton (1996), Fry (2001), and McBride-Chang (2007) in regards to the effectiveness of these styles of word lists as measured by the STAR Reading test. With the rise of popularity of social media, researchers have even begun to develop HFWL based on texting and other computer-based communications, resulting in dramatic changes every year to word frequencies used by children and young adults (Gimenes & New, 2016). None of the current research used the STAR as a measure of improvement.

The inclusion of HFWL-based beginning reading instruction in beginning reading instruction has been around for many years (Allington, 2002; Cullen, Keesey, & Wheaton, 2016). HFWL-based instruction generally favors a whole-language approach by helping students read and commit to memory these words, thus contributing to the whole-language approach.

The results of the current quantitative, quasi-experimental study contribute to the field of education in that it will demonstrate through STAR Reading test scores the effectiveness or lack thereof of basing reading instruction on HFWLs. This study is important because it may improve the way that beginning reading teachers—primarily in Kindergarten through Grade 2 and with special education and preschool teachers—teach beginning reading. If teachers are basing their reading lessons on what words the children are exposed to in current sources, and these lessons reflect current word trends in

children's literature, then the lessons are more effective and improve reading skills as measured by standardized tests (Gierut & Dale, 2007).

Further significance was achieved due to the applicability of the sample population researched. The demographics of the schools tested are very similar to a more homogenized segment of the American populace, instead of simply reflecting the more regionally differentiated populace of the area of northern Alabama where the samples were tested. This is primarily due to the unique makeup of the population of this area. Due to the region's primary employers, including NASA, Redstone Arsenal, and various governmental agencies and aerospace contractors, the families of the students tend to be more educated and of a higher socioeconomic status than other north Alabamians. These families fall closer to the American average in education and wealth levels due to the mentioned factors.

Of final significance, this research helps educators follow Proverbs 22:6, which tells us that we should "train a child in the way he should go, and when he is old he will not turn from it." This verse is crucial to the justification of developing processes to improve beginning reading lessons and the implication of HFWLs in beginning reading instruction. If teachers can provide quality reading instruction based on the highest student interest literature, then reading scores and student ability should rise and set in motion lifelong learning habits.

Research Questions

RQ1: Is there a significant difference *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR

Reading test scores?

RQ2: Is there a significant difference *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

RQ3: Is there a significant difference *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

Definitions

Automaticity. Automaticity is a fast and fairly effortless (automatic) mental process not limited by conscious thought. In reading theory, it refers to readers' ability to instantly and automatically recognize and understand a word as they read it (Hook & Jones, 2002).

Fluency. Fluency is the smoothness and lack of interruption with which a reader engages the material he or she is reading (Hook & Jones, 2002).

High frequency word lists (HFWLs). High frequency word lists (HFWLs) are word lists that teachers typically use in the instruction of beginning reading skills (Dolch, 1948).

Semantical applications. Semantical applications are rules, models, tests, and other governing principles used to build language theory and the rules of languages themselves. All accepted and standardized rules of the English language are considered its semantical application (Hook & Jones, 2002).

Sight words. Sight words are words that readers generally know upon sight. These words are automatic and read with fluency. Sight words also may refer to words that a reading instructor may be teaching to students who have not yet mastered these words, implying that these words need to become *known on sight* by readers in the future (Dolch, 1936).

CHAPTER TWO: LITERATURE REVIEW

The current study seeks to uncover the educational ramifications word list differences imply. The theoretical basis for the research and design was explored, and general educational learning theories were reviewed, namely the social cognition theory developed by Bandura (1991), which is relevant to beginning learning and early childhood development. This theory is also applicable in relationship with HFWLs and their implications on beginning reading instruction. Vygotsky's (1978) theories of social development are also crucial to the idea of HFWL development and classroom usage. Easy reading practice strategies for Kindergarten through second-grade classes are discussed, and several of the lists most commonly used historically and recently are compared.

Theoretical Framework

Sousa (2006) stated, "Reading is the result of a complex process that relies heavily on previously acquired spoken language, but also requires the learning of specific skills that are not innate to the human brain" (p. 63). Sousa placed even more pressure on the educator when he espoused, "Reading is probably the most difficult task we ask young brains to undertake" (p. 63). Even more than the spoken word by which most children begin to communicate, reading the printed word is not usually a natural concept. In fact, many cultures throughout history did not develop a written language despite having a rich spoken one.

The current research attempts to develop a historical review of classical HFWLs in the English language and how these lists have shaped educational curriculum

development, namely in beginning reading instruction. This research is based upon Vygotzy's (1978) social development theory and Bandura's (1991) social learning theory. Both theories deal, in part, with the way that young minds develop the ability to learn that symbols can be used to represent the material world; thus, the foundation of reading is laid. When students achieve success in an assigned task, such as memorizing sight words from a HFWL, they will feel confident when the teacher asks them to do the same or similar task again. The student will have what Bandura (1977) referred to as high self-efficacy. The student will more likely try harder on the next attempts at reading sight words and should complete the assignments with better results each time (Bandura, 1977). Most elementary students relish competition, and this directly applies to the competitive nature of memorizing word lists in a classroom setting.

Whole-language theory is derived from constructivist learning theory typified by the work of the Russian psychologist Lev Vygotsky (Coles, 2002). Vygotsky (1978) is the creator of what educators typically refer to as the ZPD. Vygotsky defined ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (p. 86).

Vygotsky (1978) understood student interaction as an effective way of learning. He suggested educators use learning activities that help struggling children learn from other children who have already achieved success within their ZPD (McLeod, 2012). Vygotsky believed that when a student is in the ZPD for a particular task, providing the appropriate assistance will give the student enough of a boost to achieve the task.

The historical debate between whole-language supporters and phonics-based supporters has been largely settled with an integrated, multifaceted approach utilized by the majority of beginning reading teachers today. There remains an associated difficulty with the population that beginning reading is usually charged upon. Kindergarten students are expected to arrive on the first day of school already knowing their alphabet, and teachers are expected to have their Kindergarten students reading basic texts before they graduate to first grade. In fact, the NRP (2000a) concluded that phonics instruction is the most effective for students in Kindergarten and first grade, losing effectiveness in grades above first. If educators face diminishing returns from phonics instruction only 2 years after most students enter school, perhaps another beginning reading system should be explored.

In the early 1970s, a new school of beginning reading thought began to take shape. This new reading philosophy was called whole language and was an amalgamation of both phonics-based instruction and sight word theory. Whole language relies on whole-word memorization, but the words memorized are not sight words from the classic lists but rather from whatever words are found in the authentic literature books the children are required to read by the teacher and the curriculum of any given school, district, or state. Whole-language theorists have believed that children learn to read just the same way they learn to speak—through what they experience in their daily lives both in and out of school (Sweet & Jimerson, 1996).

Further evidence for this new balanced approach was formalized by NRP (2000a). They stated that early readers require direct instruction of sound units, sight word recognition, and reading aloud. This balanced approach brings the most benefit to

beginning reading instruction. With HFWL instruction an integral and important aspect of NRP's balanced approach, it is important to understand precisely how beginning readers acquire word knowledge. Morris, Bloodgood, Lomax, and Perney (2003) stated that word knowledge develops in four blended phases: the pre-alphabetic, the partial alphabetic, the full alphabetic, and the consolidated alphabetic.

In the pre-alphabetic phase, students use salient cues in the word structure to pronounce the word and understand its meaning (Ehri, 1998). Students do not typically know their letter sounds and, therefore, cannot sound a word out, nor do they have the word knowledge to recognize sight words. Usually, if a student can read a word in this phase, it is due to a picture or other visual clue, such as reading "McDonalds" when observing the golden arches of this restaurant chain.

When in the partial-alphabetic phase, students begin to understand letter sounds, namely the beginning letter sound and often the ending letter sound. Students usually know most if not all of their alphabet. In this phase, sight word recognition begins, and HFWLs are of most value. Students learn that not all words can be sounded out and that some will simply be instantly recognizable to them (Ehri, 1998).

In the full-alphabetic phase, students connect most or all of the letters and sounds in a word and sound it out. Sight words that are impossible to sound out must be explained and taught by this phase or teachers risk student frustration and defeat (Ehri, 1998). In the final phase, consolidated alphabetic, students chunk phoneme blends and even word phrases. Efficiency, fluency, and speed begin to increase, and sight word instruction needs to be side by side to assist students with nonphonetic words (Ehri, 1998).

How these various developmental phases and other components of a well, thought-out, and balanced approach to reading instruction interact are based primarily on the social cognition theoretical work of Miller and Dollard (1941) and furthered by Canadian researcher Bandura (1986). According to Bandura, the human mind most often processes information with respect to three factors: personal, behavioral, and environmental. Bandura called this three-part relationship the triadic reciprocal determinate (see Figure 1).

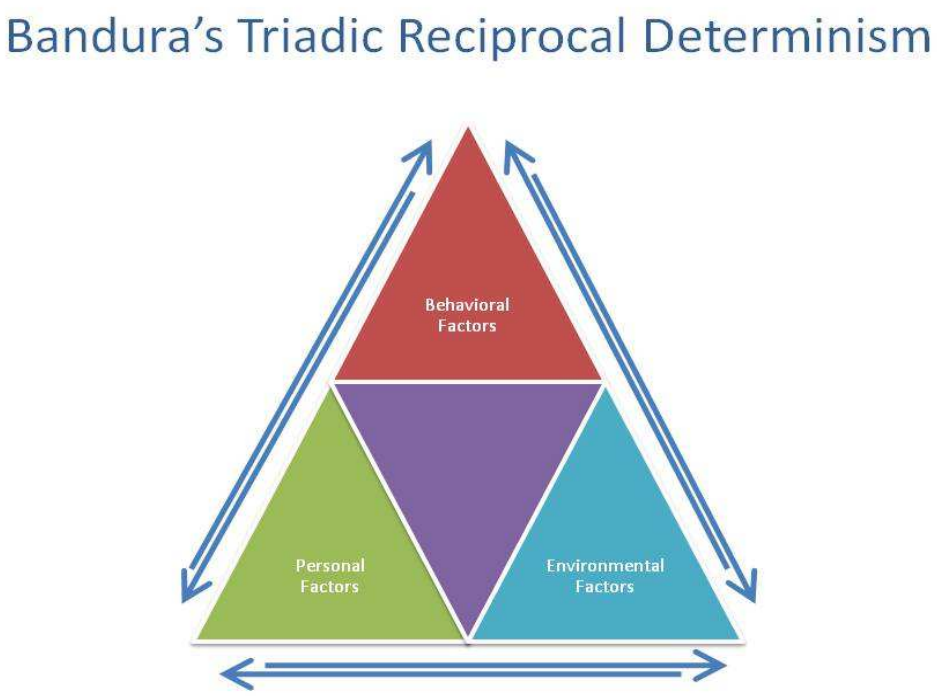


Figure 1. Bandura's (1991) triadic reciprocal determinism.

Typically, a student will receive information from environmental sources such as a teacher's instruction in a classroom setting. The student then processes the information and both stores the information and reacts to it according to the student's personality,

behavior, and the environmental factors present. While one part of the relationship is typically the lead reason for a student's decisions, all three parts interact in every decision made (Bandura, 1991). In terms of beginning reading instruction, educators and administrators must remember that there can often be numerous reasons in determining a student's ability or inability to properly process and retain information.

Social schema theory describes the human brain's ability to link and connect different schemas, or bits of information or concepts, with each other to build a web of understanding. These connections are built unconsciously and allow a person to gain inferences not originally present in the information. For students, this often creates the moment of quality learning and connections to the material presented. In beginning reading instruction, for example, a student may be introduced to a new sight word of high frequency. The student processes the new word, referencing it against the schema categorized in the mind, and making a connection to another word, a past situational memory, or any number of filed experiences.

These schemas, the experiences that students have through interacting with the environment around them, can help develop and maintain neural connections in their brains (Gallagher, 2005). Because of the nature of the developing brains of the students, teachers should ensure that their lessons are differentiated and include a wide enough variety of experiences and learning opportunities to envelop all student's developmental needs.

Two cognitive processes that can effectively increase the availability of schemas in the classroom setting are *salience* and *priming* (Bandura, 1991). Salience is the level that a schema stands out against other information—the more unusual a schema, the more

likely it will stand out it one's mind. Priming is the a priori knowledge that can affect a schema's processing, namely increasing the sensitivity to the knowledge due to prior experiences immediately before the schema interaction. These two cognitive processes can be especially important for quality instruction in the classroom. If a teacher understands that student lesson retention can be heightened through salience and priming, then the teacher can ensure his or her lessons are unique, exciting, challenging, and different enough to capture students' attention. Priming can be utilized through preteaching and lesson introduction, inviting students to build up connectible possibilities before the lessons begin.

Structured language is based on what is known about how students learn. Different students process the written and spoken word in a multitude of ways, and educators must adopt varying programs for differing learners (Moats, 2000). Although there are many variations, two basic approaches of reading and language programs exist: *structured language* and *whole-language* (or *basal*). Some students can absorb the whole and then differentiate the parts. These students generally learn to read and write quickly and without much difficulty (Moats, 2000). Other students, equally intelligent, learn best in an almost opposite way. These students start with the pieces and then construct the whole from the parts. These are the types of learners who typically benefit the most from structured language programs.

Social cognition theory is made up of four processes: self-observation, self-evaluation, self-reaction, and self-efficacy. These processes are interconnected with each having an effect on achievement of goals and personal motivation (Zimmerman & Schunk, 2001). Self-observation is remaining aware of what one is doing and saying.

This awareness can be both informative and motivational. When engaging self-observation, teachers should focus on ensuring that behavior is observed continuously while it is occurring (Zimmerman & Schunk, 2001).

In *Self-Efficacy: The Exercise of Control*, Bandura (1991) wrote, "Teachers operate collectively within an interactive social system rather than as isolates" (p. 6). Social cognition theory has applications to beginning reading instruction in that it serves as an invaluable tool to understand and affect student motivation, and it can help instill in students a desire to want to learn to read in the hope of creating students with a love of reading and building lifelong readers.

The current research combines the self-efficacy of Bandura (1991) with the ZPD of Vygotsky (1978). As the students read and began to remember the sight words on the list, their confidence grew and the tasks became easier, reflecting Bandura. These list activities were used according to Vygotsky's ZPD in conjunction with Fry and his word list. Words tend to become harder as the frequency lessened, reflecting learning trends following the ZPD. As students master the essential elements of beginning reading, their ZPD correspondingly moves as well.

Related Literature

There is much evidence supporting the efficacy of teaching reading but much less evidence regarding how this teaching should occur (Moats, 2000). Moats (2000) discussed that reading teachers should focus on language structure, language development, and language familiarity. Teachers should not excessively focus on demographics such as gender, socioeconomic status, or evenhandedness, but rather on increasing teacher knowledge and skill. Teaching reading is not an organic and natural

process, nor should it be based on a teacher's personal philosophy. Memorization of sight words is an important part of beginning reading instruction. Most students learn new words rapidly and gain mastery of large numbers of words through frequent reading (Ersland, 2014). Beginning reading should first and foremost be an intensive familiarization with letters, then high frequency words, with fluency, vocabulary, and comprehension added to complement and support each phase (Rovai, Baker, & Ponton, 2013).

There is little question that word learning and vocabulary building are cornerstones of beginning reading instruction. Beginning with Thorndike in 1921 to Dolch in 1932, word lists have been used for both instruction and assessment (Kauffman, 2000). According to McKeown and Beck (2003), word lists are generally used for two purposes: (a) to determine the level of passages a student will read in assessment and (b) to show students' ability to decode words in isolation without contextual clues.

Noah Webster was perhaps the most influential American in the history of the modern reading instruction era; he was also a creator of word lists, including HFWLs. In 1806, Webster published *An American Dictionary of the English Language*. Webster's book began to standardize the English spelling, and his spelling system remains relevant today. Webster published the first famous *New England Blue-Backed Speller* in 1808, and for more than a century after the publishing, millions of copies were sold—often second only to the Bible. The *New England Blue-Backed Speller* is a combined phonics and word list-based instructional method that employs lessons and strategies based on patterns of English speech to teach spelling and ultimately reading. The population of America in 1808 was around 5 million people. By the early part of the 20th century, the

population had increased to nearly 100 million. Immigrants were arriving in America, and most wanted to learn English. Webster's *New England Blue-Backed Speller* became the tool millions of Americans used to teach their children to read, both in the home and by teachers in the schools. Despite this success, a few influential educators, like Horace Mann of Massachusetts and John Dewey of Columbia Teachers College, began rejecting the ideas of only teaching phonics (Balmuth, 1992).

Horace Mann's philosophy of reading instruction, bolstered by the spread of the Normal School for training teachers, established the *look-and-say* teaching of reading, which was the forefront of sight word-based instruction. The earliest look-and-say primers were published by Scott Foresman in 1914; although, in 1817, Thomas Galludet developed some of the first lines of the look-and-say style with his early reader that contains the lines "Frank had a dog, his name was Spot" (Blumenfeld, 1973). Both Mann and Foresman intended to teach the children to memorize the most commonly used words in the English language, adding new words each year and eventually compiling 1,500 words needed to be learned by the end of fourth grade. In the 1930s, other publishers began to see great profitability in selling sight word-based readers and began publishing their own, beginning with Scott Foresman and Company in 1956.

In the early 1930s, it became the norm to have prescribed and standardized lists of vocabularies in most published basic reading series. Publishers discovered a need to find out which words appeared most in current reading materials. Lists of such words could then be used to form a core body of words, which children could be taught to recognize instantaneously. Knowledge and understanding of these basic sight words could be used to help make reading easier and readers much more fluent. Dolch endeavored in 1936 to

resolve the problem of cumbersome vocabulary lists by finding a reasonably smaller number of words that would be so common in everyday reading materials that children should know all these words instantly by sight.

The first 500 words of the Gates (1926) list had been used as a basis for many studies in reading vocabulary. Gates' list is generally recognized as containing the first most important words for children's reading. Gates developed his word list from several different historical sources. First, he began with Thorndike's (1921) 2,500 words of highest frequency. Then Gates added those words not found in the 2,500 from Thorndike's list, which were among the thousand words of highest frequency found by Moore in her count of words in an earlier selection of young children's literature. Finally, additional words were included from the most frequent words in a series of first-grade readers (Packer, 2001). Gates also consulted Horn's (1925) study and chose additional words from the thousand most frequent words in the spoken vocabularies of young children up to and including 6 years of age.

Wheeler and Howell (1930) also compiled an important word list. Their list consisted of the 453 words most frequently found in 10 common primers and 10 first readers published between 1922 and 1929. This list represented the reading vocabulary routinely used in Grade 1 from these publishers. It also represented the vocabulary that most, if not all, later reading instruction was built in the basic reading series. Zintz (1966) checked the vocabularies of five primary readers (preprimer through Grade 3) against the Dolch list. It was reported that over 200 of the 220 words contained on the Dolch list had been presented in each of the basic reading series by the end of the third-grade reader.

Dolch (1936) used each of the three lists described above to compile his basic list of words, which could be recognized instantly by children.

The basic list was arranged according to parts of speech. If Dolch would have rigidly adhered to the criterion of appearance of each word on all three lists, 27 of the words would have been cut from the list. According to Dolch (1948), this elimination would have been unfortunate, since the 27 words appeared in the first 510 of the Child Study Committee of the International Kindergarten Union (1929) list and in the first 500 of the Gates list. Dolch felt that these words *obviously* belonged with the other 193 words. In addition, the words for the numbers under 10, which did not appear in the original three lists, were added to the basic list, resulting in a list of 220 basic sight words (Dolch, 1948).

The 1936 Dolch list, as the name implies, is a short list of basic words that children should recognize upon immediate sight, because they are used in all writing regardless of the subject matter. It should be noted that the Dolch list contains conjunctions, prepositions, pronouns, adverbs, adjectives, and verbs. There are no nouns included on the list since each noun, according to Dolch, is tied to special subject matter. A quasi-experimental perusal of the Dolch list reveals, however, that several words (e.g., fly, work, swim, and show) may function as nouns depending upon the context in which they appear.

Dolch (1936) also believed that nouns were not as difficult to teach or learn as basic sight words. In addition, he found that the historical or longitudinal reliability of nouns was far below that of the 220 basic sight words. The nouns seldom appeared on lists generated by student usage in sufficient frequency to warrant teaching them as sight

words. He did, nevertheless, offer a list of 95 common nouns that could be taught to students who failed to get a good start in reading. The basic character of the Dolch list was demonstrated by their use in numerous textbooks.

Based on a thousand-word sampling in each book (10 samples of 100 words each, taken at equal intervals throughout the book), Dolch (1936) determined what percentage of all the running words in textbooks used in the elementary school were sight words. A sampling of four basic reading series revealed that for first-grade readers, 70% of the running words were words from the Dolch list; for second-grade readers, 66% were Dolch words; for third-grade readers, 65%; for fourth-grade readers, 61%; and for fifth- and sixth-grade readers, 59% were Dolch words. These percentages, supported by comparable percentages for similar word counts in arithmetic, geography, and history textbooks, emphasize the importance for every child having mastery of the Dolch list.

To secure his own core of high frequency words, Dolch (1948) began his list on the assumption that the most essential words needed by pupils in reading were contained in three older basic word lists. The first list Dolch used was published in 1928 by the Child Study Committee of the International Kindergarten Union. Their list was a summary of many studies even earlier that contained words children should have known and been familiar with before entering first grade. Dolch's second list was based on personal observations he made detailing Kindergarten classroom instruction. This second list contained 2,596 sight words that Dolch determined to be the most frequent of over 7,000 words known to most children before Grade 1. Most of these 7,000 words were not common words, according to Dolch. Dolch chose only those words with a frequency of 100 or more within the literature of his study classes and not simply from the words the

teachers were teaching. Dolch's selection process resulted in a list of 510 words that were spoken and read most often in the Kindergarten classes he studied and went on to become one of the most commonly used HFWLs in modern history. Dolch's sight word list and his workbooks have found their way into many aspects of American beginning reading instruction. Under the copyright laws in effect during the time of its original publication, the Dolch word list is now out of copyright protection; his list shows up in instructional books from many famous authors, from Theodor Geisel (Dr. Suess) to Jan Brett, and almost every elementary school teacher in America is familiar with his list.

Across the many years of word list development, there is little consistency in explaining how the word lists were developed. Johns and Berglund (2006) provided a detailed depth explanation of how the 20 word lists in the Basic Reading Inventory were constructed. The development of his list was also discussed in a pilot study described in the user's manual. Caldwell and Leslie (2002) stated that the sight words that are found in their QRI-3 lists came from the passages they wrote and were checked for readability level using their Standard Frequency Index. Of course, other researchers and assessment developers have not been as explanatory regarding their development of the word lists in their assessments. This is the case with *Classroom Reading Inventory* (Silvaroli & Wheelock, 2001). In their appendix, Woods and Moe (2003) provided detailed information on the development of their passages but no mention on how they developed the word lists. Bader (2002) indicated the use of graded word lists and "readers that appeared to be appropriate to each level" (p. 2) but went no further to explain what these statements mean or where the information came from originally.

In 2006, Jerry Johns and Rebecca Berglund concluded a study that replicated and validated the Dolch basic sight vocabulary and his process of compiling his list of 95 nouns. Although a few discrepancies were found between their research and Dolch's investigations, it was concluded that pseudo-empirical is a correct description of Dolch's method in compiling his basic sight vocabulary. Johns and Berglund also determined that this list is still viable, because it accounts for over 50% of the words currently used in reading materials for both children and adults. High frequency sight word reading efficiency, as measured on the Test of Word Reading Efficiency, is the most accurate predictor of reading rate in five large studies (Torgesen, Rashotte, & Alexander, 2001).

Years of research have demonstrated that reading is an act of language processing mediated by print (Moats, 2000). Even when we read silently, our oral language skills are activated. We interpret sounds, identify word position and contexts, and respect rules of grammar; and then we must link all these processes and more into a fluid stream of understanding based on our experiences and learning abilities. We also must associate symbols with sounds and translate the printed words into speech. When we write, we must do the same thing in reverse, as we translate speech into letters and then words and finally meaningful sentences. It is the speed and accuracy of these processes that separate good from poor readers of any age (Moats, 2000).

To process both sound (whether out loud or as thoughts in silent reading) and meaning, readers must register with their eyes and brains almost every letter and word of text as they are scanned. Therefore, readers need to be sensitive to all of the processes involved. A good reading instructional program must address all these processes and must stimulate awareness of these even as higher levels of text are attempted (Rayner,

1997). This program should be methodical and limited in sight word isolation, with only 10-15 sight words given at a time without context, with other sight words integrated into daily phonics instruction (Farrell, Hunter, & Osenga, 2013).

Students often fail in reading in the general education classroom because the instruction they receive is not intensive, structured, systematic, or sequential enough to help them learn the complex skills of reading (National Assessment of Educational Progress, 1994). In the past 25 years, many teacher preparation programs and curriculum materials have deemphasized the importance of decoding word skills and of learning the specificities of language structure (Stanovich & Siegel, 1994). It is widely assumed that if children are surrounded by books, read to often, and motivated to read, that they will easily learn to read (Moats, 2000). In contrast, research studies have concurred repeatedly that struggling readers most often are characterized by the lack of ability to decode words. This inability to decode words leads to less print exposure, less vocabulary, and ultimately less comprehension. Sight words do not have to be irregularly spelled words, as some educators often feel. Even rule following grapho-phonemic words can be sight words if they are frequently found in beginning readers' text (Duke & Messmer, 2016). In fact, most sight words are more regular than not, especially with the consonant vowel consonant patterns that are most likely to be encountered. For example, the sight word *come* is mostly regular; only the *o* in the middle is not. There is little evidence that students learn irregular sight words in a different way, but memorization and repetition, in isolation or within text, can help (Johnston, Invernizzi, Helman, Bear, & Templeton, 2015).

Learning to read is perhaps the most crucial goal in the education of young students. Learning to read is one of the basic communication skills, especially in developed countries. Beginning reading instruction, along with writing and spelling, creates a mental bank from which someone can draw in order to communicate effectively (Beck et al., 2002). One consistent finding in the research on early reading strategies is that word vocabulary represents a critical part of developing reading proficiency, since "knowing the words links directly to reading comprehension" (Anderson & Freebody, 1981, p. 3).

Learning to read, however, is not biologically preprogrammed. Social forces are at work in reading, just as they are for the foundations of learning to speak, and reading is still influenced by biological forces (Liberman & Shankweiler, 1991). Every writing system ever invented by man has developed a match between the spoken and the written word, and the ability to make this match quickly and fluidly depends on unique biological factors. Of course, it is easier for some children to learn to read and spell than it is for others. When we read as well as write, our eyes focus through our brain on the written words just as our ears focus on the sounds of spoken language. This is why children and adults with speech, hearing, vision, and significant delays in language development, for whatever reason, may find learning reading and spelling especially tough (Kamhi & Catts, 1991).

Lenneberg (1967) showed us that cognitive forces also help children learn their words. When spoken, children's knowledge of word meanings is initially incomplete. It is only through context that words begin to take on meanings appropriate for the child. Just as all four-legged animals might be called "doggy" by a young child, all long *a*

words are spelled with a single *a* until *ai* and *ay* words are discovered or taught. Therefore, it is not always an obvious match between the spoken and the written language for beginning readers. Mismatches occur because of the fluidity of the spoken word and the inflexible nature of the printed word and associated spelling and grammar rules and structure.

Word knowledge in the primary years is fundamentally an aural experience (Sitton, 1996). Children develop richer and richer speaking vocabularies before the written word is typically recognized. The first written words are typically a child's own name, followed closely by words that represent things important to a child's life—such as dog, cat, and I love you. As children enter school, the emphasis shifts from learning written forms of things already known to the expansion of these ideas and concepts in print.

Research completed on the educational relevance of vocabulary words has long revealed what Louisa Moats (2001) referred to as "word poverty—the persistent gap in word knowledge between advantaged and disadvantaged children" (p. 2). The gap Moats described opens up before children even enter school and widens as the students struggle through primary grades. According to Biemiller and Slonim (2001), starting in Grade 3, most average children have acquired around 6,000 root-word meanings. However, disadvantaged students acquire only around a third of those words. After Grade 2, average children acquire another 1,000 words per year. Thus, children from the lowest vocabulary quartile at the end of Grade 2 are already two or more grade levels behind average children in vocabulary (Biemiller & Slonim, 2001). They both contended that if

students with small vocabularies are to catch their average peers, teachers must help these students in the primary grades learn more words at a faster-than-average rate.

As these young children first become students, upon entering Kindergarten and into second grade, they begin to categorize and make connections about what they are learning (Oswalt, 2009). These beginning readers use their newfound knowledge of letters and corresponding sounds to develop their vocabulary. They also learn that some of their most common words cannot simply be sounded out but must be studied and memorized as a whole word, not broken into its phonetic parts. These newly learned sight words are extremely important to children's vocabulary as they are in almost every book they might pick up (Shaywitz, 2003).

During these first school years, educators are also pressured to provide as many activities as they can to help students build these connections and understand the nature of the language taught (Shaywitz, 2003). The more connections established in the first few years of school, the better chance of reading success. Connections cannot always be counted on to randomly happen, but curricula must be structured by educators and planned carefully and sequentially to ensure student absorption of the material. Students in the primary grades who have small vocabularies and/or teachers with ineffective word learning strategies will struggle with comprehension. These early struggles with reading will result in failure that will likely haunt these students throughout their academic careers, contributing to later difficulties in education (Hart & Risley, 2003; Snow, Barnes, Chandler, Goodman, & Hemphill, 2000; White, Graves, & Slater, 1990).

Middle and high school students need to learn 3,000 new words per year just to make year-to-year grade-level progress (Hook & Jones, 2002). If students learned the 20

words of a typical weekly vocabulary word list for the entire school year, they would only have mastered 700 words by the end of the year. However, the American lexicon is over 800,000 words, and the SAT word bank alone is over 30,000. However, for beginning readers, in the first 2 or 3 years of reading instruction, the pace and scope of word learning is much slower than in secondary and postsecondary education. The strong correlation between standard vocabulary testing and reading comprehension levels are typical regardless of the tests or measures used and even amongst various populations (Stahl & Fairbanks, 2003). As a student's reading vocabulary increases past 10 words, new words can be added to instruction one at a time until each new word is mastered upon sight and automatically understood (Moats & Tolman, 2016).

Reading teachers often wonder which words represent the most effective ones to teach in beginning reading. A substantial body of evidence in research (e.g., Morrisette & Gierut, 2002; Storkel & Morrisette, 2002) has demonstrated that the instruction of HFWLs leads to greater generalization than studying low-frequency words.

Many teachers are not adequately trained, nor do they have the skills to be able to correctly and effectively adapt reading teaching to address linguistic structure to beginning readers. Moats (1994) tested experienced beginning reading teachers to see if they had fluent awareness of language elements and how to teach these elements. Moats found that even passionate and experienced teachers did not understand language structure enough to adequately pass on through instruction an understanding needed for reading success.

Research has been conducted on the impact of high frequency real words versus nonsense words. The research results suggest that nonwords lead to better results. Two

studies (Gierut & Morrisette, 2010; Gierut, Morrisette, & Ziemer, 2010) supported the use of nonsense words when teaching beginning reading, but this approach is strictly phonics-based and has limited practicality in the use of sight words and HFWLs. What this research does suggest is that clearly more research needs to be done. Gierut, Morrisette, et al. (2010) recommended that if teachers are using real words as their sight words instead of nonsense words, they should be high frequency. Teachers should use instruction that is consistent with the current evidence-based theories of how students learn and use reading skills (Comings, 2015).

Zimmerman and Schunk (2001) stated that self-evaluation is the regarding of the progress made toward a set goal. They stated, "specific goals specify the amount of effort required for success and boost self-efficacy because progress is easy to gauge" (p. 12). If one has limited concern for one's goal, one will not care how one performs. Students gain confidence and self-esteem when they know they are achieving their goals. When students reach important goals, they are likely to continue to work hard to achieve other goals, since poor performance is not satisfying (Bandura, 1986). Also, findings have revealed that most elementary school students believe reading well is needed for future success. Families have a great influence on student success and should be of great concern to educators (Austin, 2016; G. Brown, Hurst, & Hail, 2016).

Self-reaction is the reaction one has on one's own performance. If students decide that their progress is acceptable, this may motivate them in the future. Conversely, if students deem that their performance is unacceptable, they may be motivated to try harder if they value their goal. Self-reaction also allows reevaluation of goals alongside achievements (Bandura, 1991). Self-efficacy is one's belief that a goal can be completed.

If a student believes that a goal is within his or her abilities, and the standards of completing goals are set high, the student will often rise to levels set. "Task-related self-efficacy increases the effort and persistence towards challenging tasks; therefore, increasing the likelihood that they will be completed" (Barling & Beattie, 1983, p. 114).

Automatic and fluent word recognition is essential in developing mastery of reading (Compton, 1995; Freebody & Byrne, 1988; Strickland & Morrow, 1991; Szeszulski & Szeszulski, 1987). The highest difficulty facing beginning readers is the retention of quick, automatic word recognition skills (Adams, 1990; Byrne, Freebody, & Gates, 1992; Ehri, 1991). Fluency as measured by speed, accuracy, and expressiveness can be correlated to comprehension; however, some students exhibit normal reading fluency but below normal comprehension (A. Johnson, Barnes, & Desrochers, 2008).

When students become fluent and automatic in the decodable reading skills, the overall comprehension of the texts also increases (Blanton & Blanton, 1994). With more exposure to print, students are more likely to develop visual word representation. This is automaticity in reading; the students begin to retrieve these automatic, or sight, words and eventually word phrases from a created long-term salient word bank (Reid & Nygren, 1988). There is also some evidence that has concluded that the highest difficulty facing beginning readers is the retention of quick, automatic word and phrasing recognition skills (Adams, 1990; Byrne et al., 1992; Chall, 1983; Ehri, 1991). This phrasing needs to be practiced on familiar text primarily made up of sight words. If sight words are not used, the text often requires the use of teacher monitoring and self-correcting strategies that reduce automaticity and slow down both the reading fluency and comprehension (Adams, 1990).

To be fluent often means to be an accurate reader, but good reading is often more than just accuracy and speed. Some research has suggested that the inclusion of prosody (pitch) or expressiveness (pauses, inflection) can increase fluency and comprehension (Schwanenflugel, Hamilton, Kuhn, Wisenbaker, & Stahl, 2004). These intonations, pausing, and pitch changes provide increased word meaning (Blachowitz & Fisher, 2000). Often the best way for students to absorb the concepts of prosody is by listening to teachers or others read aloud with the readers dramatically inserting interesting and colorful style and energy into the reading. Schwanenflugel et al. (2004) also used a structural equation model to try to establish a connection between fluency and both prosody and comprehension, but there was little evidence that prosody and comprehension were codependent. Other researchers have found different results. These phonological decoding skills play a crucial role in determining reading efficiency and fluency (Vaknin-Nasbaum, Sarid, Raveh, & Nevo, 2016).

Some evidence has suggested that slow readers lack prosody, and increases in prosody often equate to increased comprehension (Clay & Imlach, 1971; Dowhower, 1987). However, the link between prosody and comprehension has been difficult to prove consistently (Bryne et al, 1992). Also, Koriat, Greenberg, and Kreiner (2002) discovered a connection between students' prosody and fluency, but this was not directly connected to their comprehension. The connections between prosody, fluency, automaticity, and ultimately comprehension have been difficult to establish, but Hattie (2003) established that up to 30% of a student's success can be attributed to teachers' passion and methods. In fact, studies of effective primary teachers found them to be very motivating with teachers who are "exceptionally skilled at matching their teaching to the needs of

individual students" (Allington, 2002, pp. 1-2). Hill (2017) also found an urgent need for flexible, one-to-one, reading interventions

When students are taught to pay close attention to textual details and print, their ability to recognize and identify common words, as well as formulate new word decoding strategies, greatly increases, confidence builds, and reading for pleasure begins to take hold in their minds and hearts (Gillet & Temple, 1994; Strickland & Morrow, 1991). Visual perception skills also play a major influence in reading abilities (Çayir, 2017).

Eric Jensen (1998) stated, "Educators have a significant moral and ethical responsibility for enhancing the lifetime potential of an individual, especially since schools are places that learners reside for an average of six hours, 180 days for 13 year of their lives" (p. 14). With this responsibility in mind, educators should devote research and effort to continuously developing effective ways to empower students through education, which starts at a very early age with reading instruction. Even before most children attend their first day of school, they have been exposed to printed material and, therefore, to reading.

Reading is typically understood to be the most important skill for students to master, especially throughout the primary years. When readers do not have smooth fluency, they focus on individual words and often lose context and meaning. This takes the joy and pleasure out of reading, making reading even harder, especially for beginning readers. Building fluency is a struggle for many beginning readers, and it takes practice and repetition to go from simply recognizing words to automatically understanding those same words in context (Rovai et al., 2013). Many researchers have demonstrated the

direct relationship between students' vocabulary knowledge and reading comprehension (Baumann et al., 2003; McKeown, Beck, et al., 1985).

Clay (1985) claimed that limited high frequency word recognition and lack of fluency are the probable causes of most young readers' lack of comprehension. This agrees with research indicating that at the earliest stages of reading instruction, children use all their working memory in decoding the letters and textual units. With no working memory available left for them, the students lose meaning and comprehension at the expense of their previous decoding skills (A. L. Brown, Palincsar, & Purcell, 1989; Samuels, 1992, Spear-Swerling & Sternberg, 1994). For a student to free up useable memory for comprehension of text, the automatic processing of sight words is necessary. When students gain fluency through sight word lists, their memory is freed up to understand and comprehend the material instead of slowing down in decoding strategies (Mauer & Kamhi, 1996; Perfetti, 1985). Repetition and sight word practice, especially for the earliest readers, is of utmost importance (Samuels, 2006; Torgesen et al., 2001). Even in adult readers (Levy, 1993) and older children, there is evidence that practiced repetition and sight word reading improves comprehension and fluency (Levy, Nicholls, & Kohen, 1993).

To increase automaticity of sight words, practice, memorization, and overlearning are required by most students. Rather than the classic *drill and kill* familiar to most adults from their own childhoods, there need to be motivating activities for the reading students that include games and activities. The NRP (2000a) concluded, "Most of the studies failed to find a positive relationship between encouraging reading and either the amount of reading or reading achievement" (p. 76). NRP provided strong evidence of programs

that use "guided repeated oral reading" (p. 77). Activities that direct children to look at the printed words and understand the print-to-spoken word relationship are needed for the child to parlay what is being read to them into an understanding of the rules and syntax of beginning reading (Gong & Levy, 2009; Levy, Gong, Hessels, Evans, & Jared, 2006).

Perhaps the most common beginning reading strategy that parents employ is reading stories to young children. While few educators would suggest that parents stop this practice, there is little evidence of a strong connection between the amount of book reading to children and the child's own reading development (Evans, Shaw, & Bell, 2000; Senechal, Lefevre, Thomas, & Daly, 1998). Instead, research has indicated parents and educators should direct children's attention to the print itself (Wolf & Gottwald, 2016).

Only occasionally do children look at words in the book that is being read from (Evans & Saint-Aubin, 2005). These findings also provide direction on how teachers can support beginning reading students. Kinkead-Clark (2017) suggested children's perceptions of the value of reading is connected to how they use words within their own contexts of home, school, and neighborhoods. Kinkead-Clark's findings support students' use of literacy as an entry into personal social experiences. Also, visual features of the printed words within a child's environment influence attention to words; subsequently, children will pay more attention to print according to their reading ability (Neumann, Summerfield, & Neumann, 2015).

Once a student gains the knowledge of the separate words, the focus needs to change from reading one word at a time to grouping words together as phrasing (Clay, 1991). This phrasing needs to be practiced on familiar text primarily made up of sight

words. If sight words are not used, the text often requires the use of teacher-monitoring and self-correcting strategies that reduce automaticity and slow down both the reading fluency and comprehension.

Children need to learn automatic word recognition for high frequency words, some of which are bound to be phonetically irregular (Walpole & McKenna, 2007). It is precisely these irregular words that offer the strongest compulsion to teach automaticity in word recognition, as these irregular words cannot be quickly and accurately sounded out by primary readers. Students who learn to read quickly acquire word recognition skills more readily, but this does not necessarily improve language development (Suggate, 2015).

To most accurately develop beginning readers' curricula, educational researchers have typically concentrated on HFWLs. The main word lists historically used are the Fry (1980) New Instant Word List and the Dolch (1948) Sight Words List. These two lists were derived from massive compilations of words from textbooks written for first- through 12th-grade American students and have their efficacy based on even older word lists compiled for the last few hundred years. Most teachers do not have the time, desire, or basal knowledge to undertake their own HFWL development; therefore, they almost exclusively use these prepared lists. However, these lists are not readily updated, and most teachers feel that updating HFWLs is irrelevant to beginning reading instruction. According to Spencer and Hay (1998), HFWLs should not be static and dated but reflect the current literature and instructional practices used within the classrooms.

HFWLs can and do change dramatically. In 1783, Noah Webster published his first *Blue-Backed Speller*, which was subsequently printed in 385 editions, several years

being the second highest-selling book only behind the Bible. Over 200 million Americans eventually learned to spell from this book (Bynack, 1984). However, Webster's speller had several words on his common words list that most students would not recognize and that teachers and administrators would disapprove of—like tung (for tounge), cock (for a male chicken), bung, sire, God, and Satan. Ellis (1979) postulated that Webster was instrumental in helping form many of Jean Piaget's educational learning theories, and that HFWL studies were instrumental in early reading mastery.

Spelling is also linked to reading in some very strong ways. Even though words might be read out loud in the exact way, the meanings can be very different. Consider the example from Rebecca Sitton (1996): "There are four pears" is read exactly like "Their our for pairs." Most spell-check programs will not notice these errors. However, most readers would understand that an error has occurred, and they would correct it through their context in mental reading. Research also has supported the idea that poor readers are also poor spellers (Zhang, Bingham, & Quinn, 2017)

The first obligation of educators is to be conscientious of how students develop and learn (Sitton, 1996). Once this consideration is made, however, the educator must apply this knowledge to the development of strategies designed to effectively increase the learning of the student. Sitton (1996) believed that it is irresponsible for educators to assume, for specifically both reading and spelling but in general for all subjects, that these strategies come intuitively while competing with the multitude of demands faced in the classroom.

Reading and spelling curriculum design needs to be both scope matched and sequenced to ensure student success (Henderson, 1985). Basic literacy, including both

spelling and reading, must be a necessitated and ensured educational outcome. To function literally in the classroom and ultimately in the workforce, students need to be equipped with the basic language skills, including reading and spelling high frequency words. According to Sitton (1996), words with the highest usage every day should be the ones that students are taught first how to read and spell. Classroom culture also greatly influences students' perceptions on the value of literacy (Austin, 2016; Osterbye, 2016). These cultures are influenced highly by teacher attitude and demeanor.

A student typically cannot read a word without being able to spell it, as the letters need to be recognized and presented to the brain in the order they are written. However, the inverse is typically not true (Templeton, 1986). According to Templeton (1986), it may even be harmful to attempt to teach students to spell words they cannot yet read with relative ease. It makes no sense to expect a student to learn to write the letter sequences of a word that could not be read after it was written. Reading skills and vocabulary can be reinforced through spelling, especially if done in the correct order, and the same HFWLs can be used for both (Templeton, 1986).

As teachers become more concerned with testing students' reading abilities, reading comprehension tests and informal reading inventories (IRIs) measuring vocabulary become a bigger concern for researchers and policymakers interested in education (Paris, 2005). Using IRIs has been suggested by several researchers (Paris, 2005; Tompkins, 2003) to measure students' prosody, accuracy, and comprehension. According to Cooper and Kiger (2006), although the content of IRIs is almost always varied, virtually all of them contain vocabulary from HFWLs in some form.

Not even all English-speaking countries have identical HFWLs. According to the Australian Salisbury Word List (Education Department of South Australia, 1979), the words mum, possum, smarty, and tuck appear very high up on their list. English HFWLs typically have words with an extra *u*, as in favourite and colour. Ben Franklin was in favor of retaining these classic English spellings when he collaborated with Webster, but Webster won out (Ellis, 1979). Webster also chose the *s* over the *c* in words like defense, thus cementing American spellings from then on. Other archaic usages, such as thrice and twain, ended up falling off common HFWLs as time progressed and American dialects changed.

In 1993, Graham, Harris, and Loynachan developed The Basic Spelling Vocabulary List. This list was developed to help teachers know which words should be taught to students first and it contained 850 words that account for almost 80% of the words students use in their writing and read with the most frequency. According to Graham, Harris, et al., the most common 1,000 words are used 13 times more frequently than the next most common 1,000 words. When students develop mastery of the relatively small list of the most frequent words, they score higher on most reading assessments (van de Ven, de Leeuw, van Weerdenburg, & Steenbeek-Planting, 2017).

Of course, the effectiveness of word list-based instruction must be addressed. According to Richek, Caldwell, Jennings, and Lerner (2002), a student's performance on a HFWL provides the educator with important diagnostic information about word recognition abilities. Bader (2002) stated, "Word lists may be used as a starting point in administering graded reading passages or to gain additional insight into the types of word recognition errors made" (p. 4).

Educators are often reluctant to change teaching styles, especially if these styles have been in place for a long time (Sitton, 1996). Though there has been progress to abandon antiquated practices in favor of research-proven strategies, teachers often revert to their comfort levels and old ways of teaching. Reeducation in reading instruction is the key. Most teachers genuinely want to become or continue to be effective teachers, especially those responsible for beginning reading instruction (Henderson, 1985). Educators also remain interested in serving their students as effectively as possible (Cannata et al., 2017). Even back in 1923, researchers such as Kingsley were recommending research-based methods to teach spelling and reading.

Leading reading researchers have uncovered a pattern of behavior in students' word recognition habits. Many experiments involve giving students a word list and asking them to read the list as quickly as possible, pressing one button if they recognize a word and another button if they do not recognize it as a real word. The time needed to correctly answer is measured. A typical finding is that common words are recognized more quickly than uncommon ones—what Borowsky and Besner (1993) called the "word frequency effect" (p. 32). This idea is based on the fluidity of readers and their ability to smoothly and seamlessly engage the written word. Lack of fluency causes readers to be slow and inconsistent. These readers also have poor phrasing and inadequate intonation patterns, while good readers use appropriate phrasing and intonation. According to NRP (2000a), children accurately reading aloud with speed and proper expression comprehend and remember the material better than when reading inefficiently.

Solity (2006) revealed in his early reading research that the incidence of children having problems with reading was reduced from about 20-25% to less than 2% through

the course of 3 years. His work involved both phonics, the letters sounds and combinations, and HFWLs. Solity's core 100 words account for 53% of all the words in his database of 850,000 words analyzed; however, these words were primarily found in adult texts. Sixteen words accounted for almost one quarter of all the words in his list. "If you teach more and more of them, children end up being confused—and they are just redundant" (Solity, 2006, p. 15). More recently, both a phonological and a nonphonological approach to preschool instruction produced dramatic improvements in first-grade reading scores (Batson-Magnuson, 2016).

Summary

The literature has shown there is strong historical usage of HFWLs, which have been used mainly in developing the *whole language* process common across America's primary grades; but they also have begun to be used in phonics-based programs. These two main types of reading and spelling instruction show benefits from the use of HFWLs instruction. These benefits were recognized over 100 years ago. Current literature implies a gap in the research comparing the direct results of research between samples of students receiving HFWL-based instruction and those not. Typically, a school district or an entire state curriculum is either for or against HFWL instruction, much as they are either whole language or phonics-based. There needs to be further research into the effectiveness of HFWL-based instruction as it applies to two samples that are otherwise identical in curriculum and instructional technique.

CHAPTER THREE: METHOD

Design

Research is needed to demonstrate if there is any connection between the use of HFWLs and an increase in student achievement in beginning reading. The current research used a quantitative, quasi-experimental method because it measures differences in STAR Reading test scores upon various classes that are given basic instruction using HFWLs and a control group of classes receiving no HFWL-based lessons in reading. These test scores were analyzed using an independent-samples *t* test, because it could compare the observed variant frequencies of both the control group and experimental groups at the conclusion of the research period.

The comparisons determined if beginning reading instruction based on a HFWL is better at increasing STAR Reading test scores when compared to beginning reading instruction only based on the state-provided curriculum and activities designed by the curriculum publishers and only following the state-approved course of study. The dependent variable was mean growth scores. The independent variable was intervention status (HFWL-based instruction or non-HFWL-based instruction) as measured at three grade levels: Kindergarten, first, and second.

The rationale for this type of research is that quasi-experimental studies encompass a broad range of nonrandomized intervention studies. These designs are frequently used when it is not logistically feasible or ethical to conduct a randomized controlled trial (A. D. Harris, McGregor, Perencevich, Furuno, & Zhu, 2006). Educators who teach beginning reading develop both reading and spelling lessons based on word

lists recommended by administrators, peers, and other sources but rarely from research-based methods.

Research Questions

RQ1: Is there a significant difference *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

RQ2: Is there a significant difference *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

RQ3: Is there a significant difference *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

Hypotheses

The null hypotheses for this study follow:

$H_0$1: There was no statistically significant differences *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

$H_0$2: There was no statistically significant differences *between the average growth scores for first-grade students receiving beginning HFWL reading*

instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

$H_0$3: There was no statistically significant differences *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

Participants and Setting

The participants in this research consisted of a control group of 46 students in three Kindergarten classes, with 25 males (20 White, 2 Black, and 3 Hispanic) and 21 females (18 White, 2 Black, and 1 Hispanic). The Kindergarten experimental group contained 14 students in one Kindergarten class, with 7 males (5 White, 1 Black, and 1 Hispanic) and 7 females (6 White, 0 Black, and 1 Hispanic). There were 48 students in the control group of three first-grade classes with 25 Males (22 White, 2 Black, and 1 Hispanic) and 23 Females (20 White, 1 Black, and 2 Hispanic). The first-grade experimental group contained 16 students in one first-grade class with 9 males (7 White, 1 Black, and 1 Hispanic) and 7 females (6 White, 0 Black, and 1 Hispanic). There were 50 students in the control group of three second-grade classes with 24 Males (21 White and 3 Hispanic) and 26 Females (20 White, 3 Black, and 3 Hispanic). The second-grade experimental group contained 16 students in one second-grade class, with 8 males (6 White, 1 Black, and 1 Hispanic) and 8 females (6 White, 0 Black, and 2 Hispanic).

All students attended a small rural school in a large school district in northern Alabama. This district and the facility class sites were chosen to represent a population of typical parents in the northern Alabama region. This area contains a diverse population

with a wide variety of economic and cultural representation. Due to the unique employers in this region—including NASA and Redstone Arsenal (U.S. Army) and their contractors and the University of Alabama Huntsville—the region's population is atypical for the greater part of Alabama. This demographic set should more closely represent a population found around the United States, instead of simply selecting a population from a more culturally homogeneous location. Perhaps the single most contributing factor to this anomaly is the area's high education level (see Table 1). This high education level attracts business and government institutions seeking an educated workforce. This area contains a very large number of engineers and scientists per capita, arguably the largest research park in the United States and the fourth largest in the world (Bruns, 2009).

Table 1

Huntsville, Alabama, Education Level

Variable	Huntsville	%	Alabama	U.S.
Total 25+ years population	120,694	100%	3,161,521	204,288,933
Less than high school	15,324	12.70%, see rank	17.87%	14.42%
High school graduate	22,320	18.49%, see rank	31.26%	28.50%
Some college or associate degree	37,256	30.87%, see rank	28.97%	28.89%
Bachelor degree	27,578	22.85%, see rank	13.91%	17.74%
Master, doctorate, or professional Degree	18,216	15.09%, see rank	8.00%	10.44%

Note. Total population is 181,126 from January 1, 2010 (U.S. Census Bureau, 2013).

The school in this study is from a district with approximately 23,500 students and 4,100 employees according to the Madison County Schools (2014) demographic information. The primary towns that feed into this district are Madison and Huntsville, Alabama, and the surrounding unincorporated areas of Madison County. The researched

school is in the unincorporated area of northern Madison County, Alabama; it primarily serves a rural, farming community mixed with small bedroom communities and subdivisions approximately 20 miles from Huntsville. This school is also a federally designated Title 1 school, meaning that a high percentage of its students are eligible for free or reduced lunch, and the overall economic status is lower than other schools within the district and the area. The other schools in the district primarily serve a suburban community approximately 10 miles from Huntsville and are not a Title 1 school.

Instrumentation

The STAR Reading test was developed by the Renaissance Learning Corporation and was used with permission. Directions for the test are standardized, and the student population as well as the teachers in the research are intimately familiar with the testing directions and procedures. Bennicoff-Nan (2002) concluded that the STAR Reading test is an effective way to monitor student reading improvement within the classroom. Bennicoff-Nan recommended that administrators use the STAR to monitor students and assist teachers in lesson planning and acute reading intervention. In 2007, Betts and McBride used data from over 30,000 students taking both the STAR Early Literacy and the STAR Reading tests; summaries of data showed both high technical quality and longitudinal and predictive data from users of both STAR tests. These data illustrate STAR's value in predicting educational outcomes and tracking reading performance trends. Researchers at the University of North Carolina at Charlotte showed that the STAR Reading test could predict later performance on a high-stakes test (Algozzine, Wang, & Boukhtiarov, 2011; Florida State Department of Education, 2017).

According to the Southwest Educational Development Laboratory (SEDL; 2012), the Star Reading test has attained recognition as a scientifically research-based, progress-monitoring instrument by the federally funded National Center for Student Progress Monitoring. Also, according to the National Center for Response to Intervention, the STAR Early Literacy test is highly rated for screening and progress monitoring by the National Center on Response to Intervention. Both STAR Reading and STAR Math have received the highest possible ratings for screening and progress monitoring from the National Center on Response to Intervention
, with perfect scores in all categories (U.S. Department of Education: National Center on Response to Intervention, 2010).

Renaissance Learning concur with Spencer and Hay (1998): they feel a HFWL should be dynamic and regularly updated. Renaissance uses their STAR software in conjunction with their Accelerated Reader programs to maintain a frequency list based solely on their Accelerated Reader books and the number of times each book in their series is tested.

Depending on any given year, some strange anomalies arise. In 1996, Alyssa Satin Capucilli published her first *Biscuit* book with Harper Collins. Over the next few years, over 17 million copies of various *Biscuit* books were published (Capucilli, 2013). Within a few months of the first publishing of *Biscuit*, the word *biscuit* launched from obscurity to the top of Renaissance's HFWL. It became evident that Kindergarten teachers needed to teach the word *biscuit* to their students to assist them in enjoying Capucilli's books. Biscuit is not a phonetic word, and Kindergartners can have trouble on their own sounding biscuit out. Through sight word instruction and by including it in

HFWL instruction, students could learn to identify this word and successfully read it in living text.

The style and design of both the STAR tests have also been proven numerous times with M. J. Johnson and Weiss (1980) providing definitive support of STAR's test design. Mattimore (2009) also showed that the multiple-choice design of the STAR tests is both valid and effective. Additionally, SEDL (2014) categorized STAR Reading and STAR Early Literacy as criterion-referenced and norm-referenced assessments. In this latter case, the STAR Early Literacy package is said to evaluate eight of the most important cognitive elements. STAR Early Literacy was also mentioned in the 2006 Readers' Choice Awards: Best Reading Software—a survey by eSchool News for both reliability and validity.

Procedures

Permission was secured from both the Liberty University's Institutional Review Board to conduct this research (see Appendix A) and the county board of education where the study was conducted (see Appendix B). Additional permission from each participating teacher was secured before any STAR tests and any instruction was administered. This report will fall most noticeably short in the area of scope and size of source material. The three high frequency list studies are not exhaustive and may not be completely representational of the body of children's reading material in the United States. Confidentiality was the most pressing issue in this report. Student scores remained completely anonymous. Any names and inferences were changed to protect the students as well as the educators involved. These concerns were made known to the parents of the students tested, and the confidential nature of the report was explained thoroughly.

All groups of teachers involved in the instruction of the basic HFWLs were initially directed by the researcher following four main beginning reading instructional activities. All of these activities can be initially traced back to versions found in Fry's (2001) *Instant Word Practice Book for Primary Grades*. This practice book and the instructional activities are based on Fry's research on HFWLs and his beginning reading instruction. These activities were given for a period of approximately 5 minutes per day with each teacher adhering to the following schedule: Monday–word review and repetition, Tuesday–flash cards, Wednesday–bingo, Thursday–pairs game, and Friday–concentration.

The words to be learned came from the corresponding grade-level HFWL, and the words on the list were divided into 15 equal groups with each group taught for 1 week. The entire instruction process extended over 10 weeks of school beginning immediately after the second STAR test was given in December 2014 after the midyear STAR test was given. Each week the activities remained the same and on the same schedule. This procedural structure was designed to limit the variances in the instruction and any anomalies that might be present without such structure. The activities are described.

For *word review and repetition*, the teacher selected that week's group of words from Fry's HFWL, saying the word to the students and having students repeat each word. The teacher then displayed the word on the board using a large point size and Times New Roman font. The teacher continued reviewing the words with the students repeating until the session was complete.

The *flash cards* are teacher-made 3x5 index cards with the right corner cut off so the students know which way faces up and the HFW printed on one side. Students read

the words to each other in pairs or small groups, correcting each other and reviewing the words until the session is finished.

In *bingo*, the most recent 15 words from the HFWL were placed on cards in random order with each student getting a card. The teacher drew corresponding words and called them out with each student marking off each word as it is read. All the students *win* at the same time as the teacher reads the last word for that group, and a shared praise or prize can be given.

The *pairs game* is like Go Fish. Students were grouped together in sets of three or four. Decks of 30 cards were made, with two cards for each of the most recent 15 words making up the deck. Students were dealt five cards each with the remaining cards put in a draw pile. Play goes around the circle to the right. As soon as a student gets a pair, he or she laid down the pair. Each student took turns asking any other player if he or she has a particular word card. If the asked player has the card, he or she gives it to the asker. If not, the asked player says "no," and the asker draws a card from the pile. Play continued until all pairs are made or the session ends.

For *concentration*, using the week's pairs game decks, an entire deck is spread out in mixed-up rows, face down. Student groups of three or four take turns flipping over and reading two cards of their choosing. If the cards match, the player removes the two cards and goes again. If they do not match, they are turned back over and the next player takes a turn. The game continues until all cards are matched or the session ends.

The control group used other words from the normal state-developed course of study and scope and sequence of the calendar months researched. Although some of the words used showed up in both groups, only the first group had all of their words from

Fry's list, and the words used each week were directly taken from Fry's list in the frequency order they are found. The time devoted to both the HFWL instruction and the control group instruction were taken from SSR times allocated for each grade immediately before transition out of Reading instruction block.

Each day, both the research and control groups of teachers devoted approximately 10 minutes of beginning reading instruction to this study. The words for the activities came from two controlled sources. The research group took their words from Fry's HFWL and used 20 words each week for the duration of the study. The Kindergarten teachers started with Fry words Number 1-15 for the first week; in the second week, they used Numbers 16-30; and so on with the next 15 listed words used in each subsequent week. At the end of 10 weeks, the Kindergarten classes had gone through the first 150 words from Fry's list. The first-grade classes began on word Number 101 and continued 15 words per week for 10 weeks, ending on word Number 250. The second-grade classes began on word Number 201 and continued for 2 weeks as well, ending on word 350.

STAR Reading scores were measured prior to the intervention using the word lists in mid-January 2015. The STAR test was then given again at the end of April 2015. While a STAR test was given in September 2014 as well, as the STAR test is typically given three times per school year, the September test scores were not included, as they carry no reflection of the HFWL-based added instruction that begins in January. Overall change was compared, and a comparison was made regarding the improvements of student scores and if they had added HFWL instruction in the daily reading lessons.

The STAR test was controlled by ensuring that the teachers give the test according to the same protocols. These protocols included making sure that the test is

given within the same week for every class, having the GENED Teacher and the Computer Lab teacher present during testing for security and control measures, instructing the students that they were following Alabama Math and Reading Test (ARMT) testing procedures, and ensuring that the students were not assisted in any way not normally associated with the STAR and ARMT testing procedures.

All teachers within the district are trained on the STAR test, and the teachers base their lessons and testing procedures on the protocols detailed to them by both the district and the State of Alabama. These internal policies do not invalidate any findings established regarding proper testing procedures and protocols (Rovai et al., 2013). All reading instruction plans, scope, sequence, standards, and delivery methods are monitored by the schools' administration, and this monitoring is typical for this district and should not interfere with any testing validity due to the consistent nature of teaching delivery. This consistency increases the homogenous nature of the classes and provides reliable data when only the research variables are manipulated.

This research initiated a comparison of the HFWLs. The differing educational ramifications that these list differences imply was discussed. HFWLs were in beginning reading instruction in one group of classes that was taught using the same instructional techniques and a control group of classes that was given no instruction based on a HFWL. The two groups were given a STAR Reading test in January before the designated spring instruction began. The groups were tested again with the STAR test in May at the end of the school year. The overall differences in average student scores were compared.

Data Analysis

The data gathered from the STAR Reading tests and answers to the STAR tests (scores) were compared to formulate answers to the guiding questions and to attempt to show trends with regard to the HFWLs. Independent-samples *t* tests were conducted to examine the differences in the STAR Reading test scores given first in December 2014 and later in April 2015 based on the independent variable. Using SPSS-based *t* tests are effective tools for this type of information (Gall et al., 2007). Scores representing the mean STAR test score were submitted using Erlebacher's (1977) method with STAR Reading test scores as independent variables. Scores were calculated using average growth. This average growth is a class average score of the difference between the beginning-of-the-year STAR score and the end-of-the-year STAR score. This average growth was used to show growth differences between the control groups and the experimental groups. Average growth reflects the commonly observed pattern of academic growth related to the starting status of students on a measurement scale. Students typically starting out at a lower level tend to grow more. This procedure results in a highly flexible and better contextualized reference for understanding reading growth scores (Thum & Hauser, 2015).

Levene's tests were run to determine equality of variances. Histograms were compared to ensure data was within normal trends and limits. Descriptive statistics (*M, SD*), number (*N*), number per cell (*n*), degrees of freedom (*df*), t value (*t*), significance level (*p*), and effect size were also measured and are discussed.

CHAPTER FOUR: FINDINGS

Overview

The purpose of the current quantitative, quasi-experimental study was to test the theory of using HFWL-based instruction when teaching beginning reading instruction resulting in a statistically significant difference in the overall STAR test in reading when compared to students who did not receive such instruction. Students in Kindergarten, first-grade, and second-grade classes enrolled within a large school district in northern Alabama were studied. From 12 classes comprised of approximately 190 students, one group of teachers used Fry's HFWL words as the words for daily beginning reading instructional activities. In addition, considering current educational trends to develop and utilize word lists for beginning reading instruction and the move toward increased reliance on standardized testing and methods, this research is timely in that it addresses to some degree aspects of both of these trends.

This study contributes to the body of knowledge of beginning reading instruction in regard to the effects of HFWL-based instruction with a specific focus on Dr. Fry's word list. This research study also provides current and relevant literature that investigated the effects of word list usage in general and HFWLs in particular, again with emphasis on current lists.

Research Questions

The following research questions were investigated:

RQ1: Is there a significant difference *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students

who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

RQ2: Is there a significant difference *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

RQ3: Is there a significant difference *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

Null Hypotheses

$H_0$1: There was no statistically significant differences *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

$H_0$2: There was no statistically significant differences *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

$H_0$3: There was no statistically significant differences *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

Descriptive Statistics

The participants in this research consisted of all the students in the four Kindergarten, four first-grade classes, and four second-grade classes at a small rural school within a large school district in northern Alabama. STAR scores were first compared between the control group and the experimental group (see Table 2). STAR scores were also compared to the entire school district where the experiment occurred and the national average scores for the STAR test (see Table 3).

Table 2

Descriptive Statistics (Average Growth)

Class	*N*	*SD*	*M*
Kindergarten (Experimental)	14	96	242
Kindergarten (Control)	46	48	243
First Grade (Experimental)	16	101	128
First Grade (Control)	48	70	131
Second Grade (Experimental)	16	151	129
Second Grade (Control)	50	112	127

Table 3

Average Beginning-of-Year (BOY) and End-of-Year (EOY) STAR Reading Scores

Variable	BOY	EOY	Avg. growth
Kindergarten			
School	479	722	243
District	502	725	223
National	511	738	227
Experimental group	485	727	242
First Grade			
School	77	207	130
District	86	198	112
National	90	188	98
Experimental group	94	210	128
Second Grade			
School	231	358	128
District	228	351	123
Nation	239	343	104
Experimental group	228	357	129

Results

The control group consisted of the remaining classes not included in the experimental HFWL-based instruction classes. The average BOY and EOY scores were received as raw data and converted into averages for comparison to the experimental groups.

Research Question 1

RQ1: Is there a statistically significant difference *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

$H_0$1: There was no statistically significant differences *between the average growth scores for K students receiving beginning HFWL reading*

instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

The histograms showed nearly normal distributions (see Table 5). The *t* test is robust to some violation of normality. Based on Levene's test results, the assumption of equality of variance was found to be tenable, $F = 4.0117$, $p = .059$. An independent-samples *t* test was conducted to evaluate the effect on Kindergarten students' STAR Reading test scores between those who *received beginning HFWL reading instruction* and those students who did not . The test was not significant, $t = -0.182$, $p = .854$ (see Table 4). Students who received HFWL reading instruction posted lower STAR Reading Test scores ($M = 242$, $SD = 96$) than those who did not ($M = 243$, $SD = 48$). The 95% confidence interval for the difference in means was 42.78. The inferential test for effect size indicated that 11% of the variance of the reading score was accounted for by the treatment. Based on Cohen's (1988) threshold of .2 for small, .5 for medium, and .8 for large, the effect size was small.

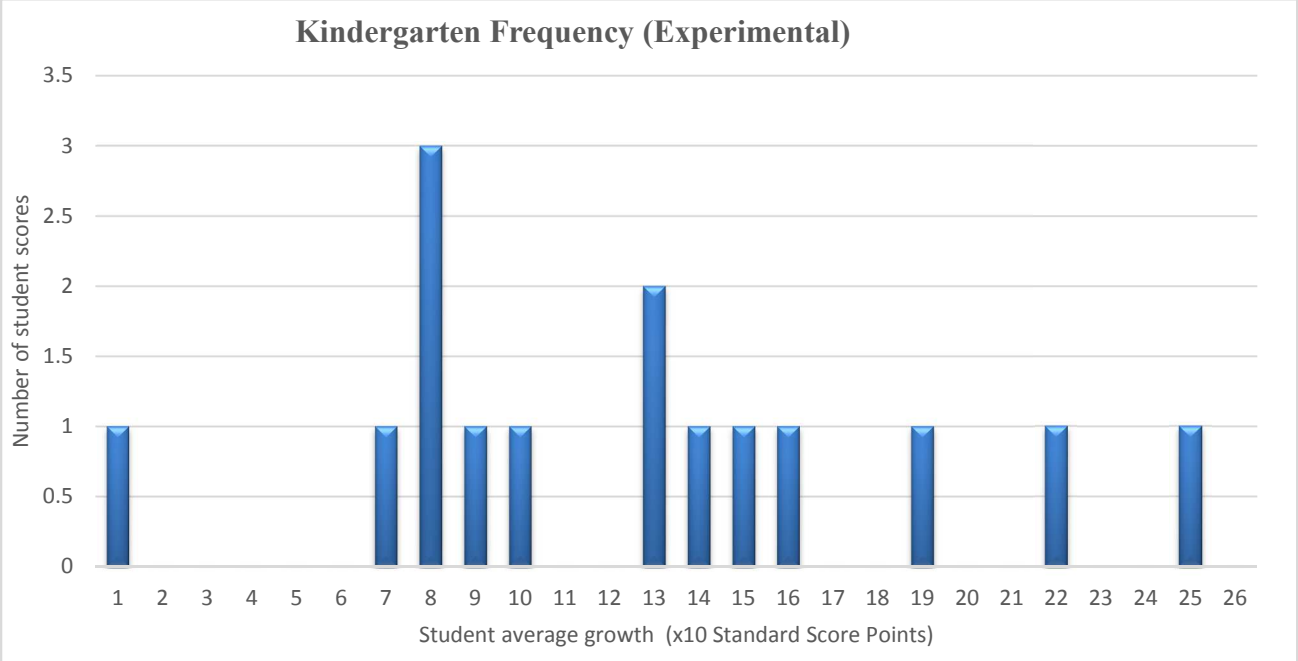
Table 4

Two-Sample Test for Equality of Variances (Levene's Test)

Variable	Kindergarten frequency control	Experimental
M	1.807692	0.538462
Variance	2.641538	0.658462
Observations	46	14
df	25	25
F	4.011682	
$P(F \leq f)$, one-tailed	.0594	
F critical, one-tailed	1.955447	

Table 5

Histograms for Kindergarten Frequency Scores



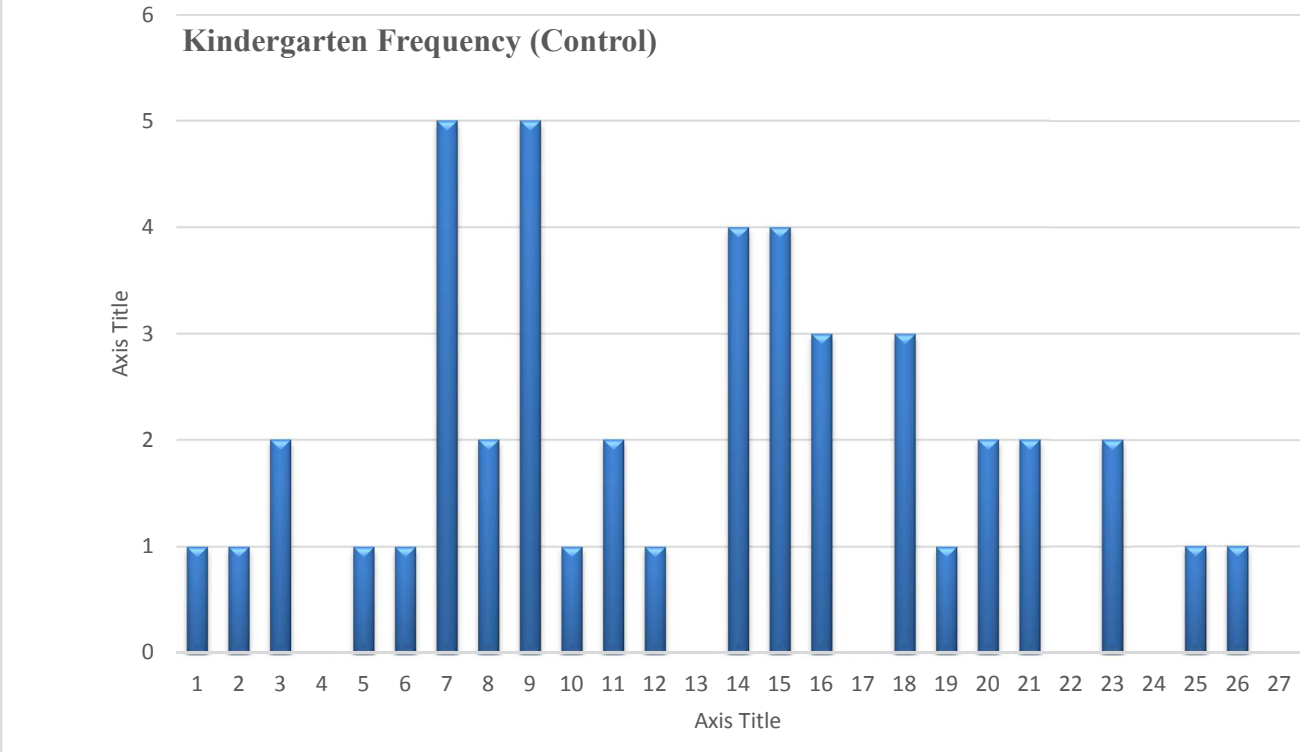


Table 6

t Test for Kindergarten STAR Reading Test Scores

Variable	Experimental	Control
M	242.1	243.4
Variance	4615.385	10202.9
Observations	14	46
Pooled variance	8950.525	
Hypothesized *M* difference	0	
df	58	
t stat	-0.18519	
$P(T \leq t)$, one-tailed	.426863	
t critical, one-tailed	1.671553	
$P(T \leq t)$, two-tailed	.853725	
t critical, two-tailed	2.001717	

Note. Two-sample assuming equal variances.

No statistical differences were found *between the average growth scores for K students receiving beginning HFWL reading instruction* and those students who were not receiving instruction based on HFWLs as shown by STAR Reading test scores. The use of HFWL instruction did not significantly change the average Kindergarten students receiving beginning HFWL reading instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores. The two-tailed results were $p = .85$; therefore, the researcher failed to reject null hypothesis 1.

Research Question 2

RQ2: Is there a statistically significant difference *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores?

$H_0$2: There was no statistically significant differences between the average first-grade students receiving beginning HFWL reading instruction and those

students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

The histograms showed nearly normal distributions (see Table 8). The *t* test is robust to some violation of normality. Based on Levene's test results, the assumption of equality of variance was found to be tenable, $F = 4.124$, $p = .064$. An independent-samples *t* test was conducted to evaluate the effect on First Grade students' STAR Reading test scores between those who *received beginning HFWL reading instruction* and those students who did not. The test was not significant, $t = -0.548$, $p = .585$. Students who received HFWL reading instruction posted lower STAR Reading test scores ($M = 128$, $SD = 101$) than those who did not ($M = 131$, $SD = 70$). The 95% confidence interval for the difference in means was 37.55. The inferential test for effect size indicated that 9% of the variance of the reading score was accounted for by the treatment. Based on Cohen's (1988) threshold of .2 for small, .5 for medium, and .8 for large, the effect size was small.

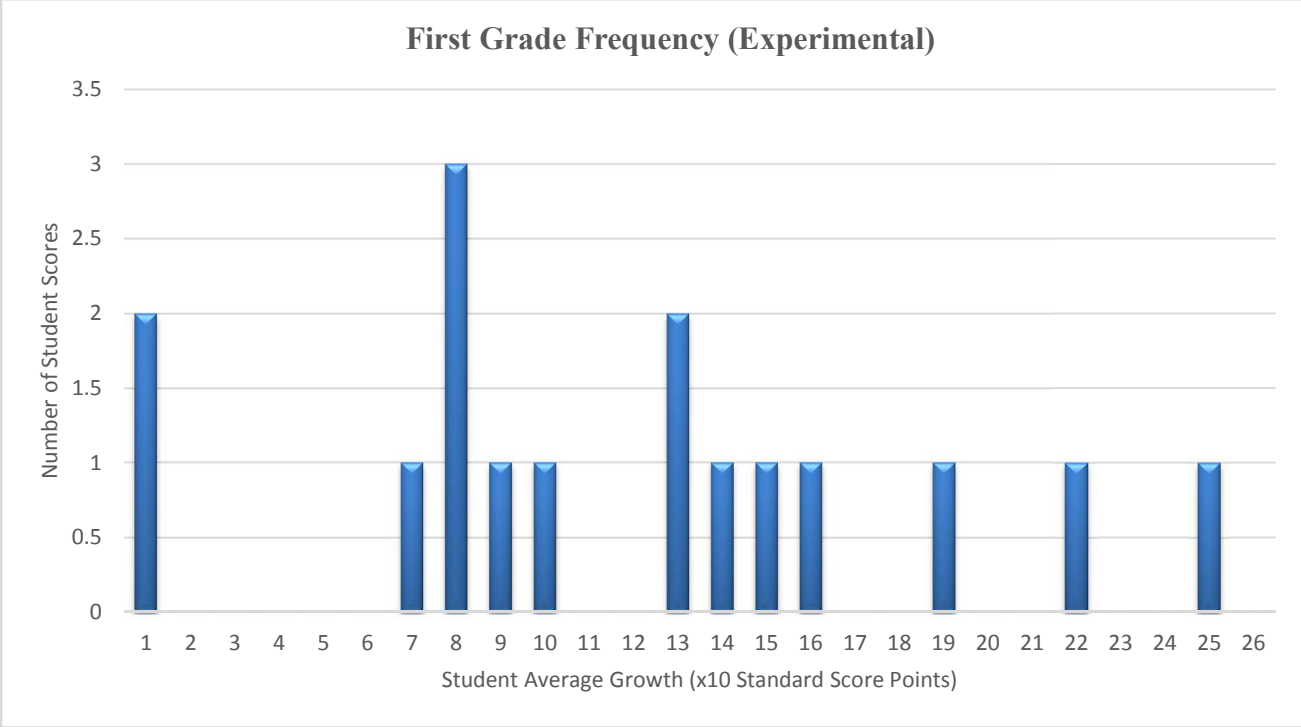
Table 7

Two-Sample Test for Equality of Variances (Levene's Test)

First-grade frequency	Control	Experimental
M	1.807692	0.5
Variance	2.721538	0.66
Observations	48	16
df	25	25
F	4.123543	
$P(F \leq f)$, one-tailed	.0638	
F critical, one-tailed	1.955447	

Table 8

Histogram for First-Grade Experimental Frequency Score



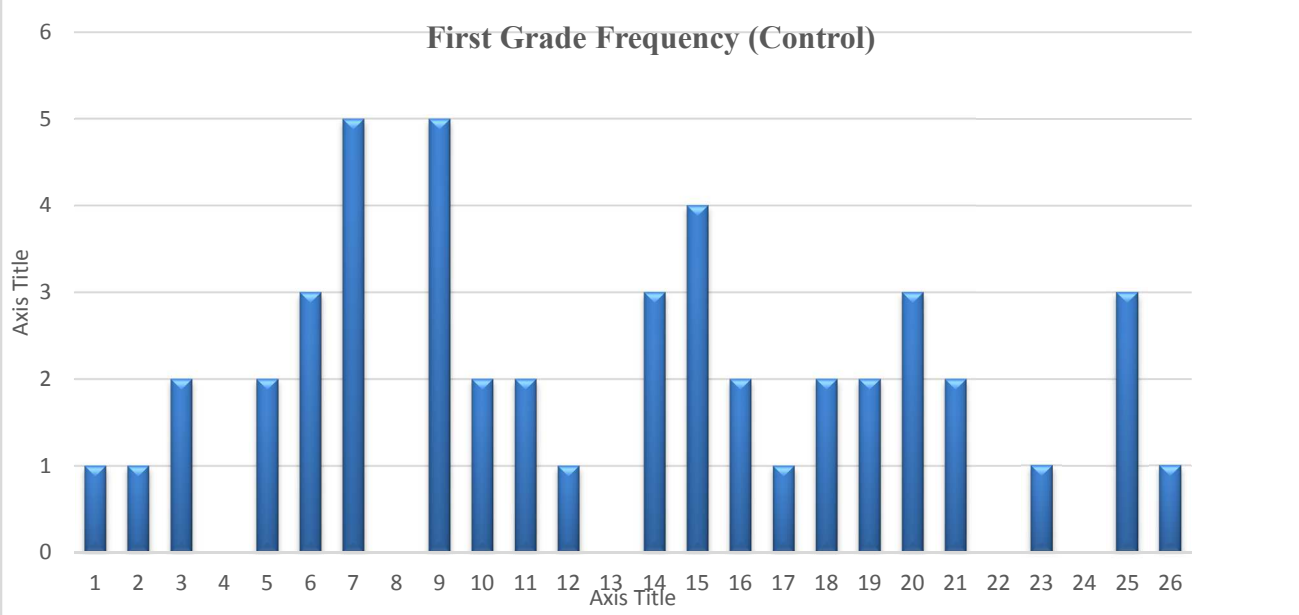


Table 9

t Test for First-Grade STAR Reading Test Scores

Variable	Experimental	Control
M	127.9	131.4
Variance	9333.396	9630.121
Observations	16	48
Pooled variance	9558.332	
Hypothesized *M* difference	0	
df	62	
t Stat	-0.54846	
$P(T \leq t)$, one-tailed	.292672	
t critical, one-tailed	1.669804	
$P(T \leq t)$, two-tailed	.585344	
t critical, two-tailed	1.998972	

Note. Two-sample assuming equal variances.

No statistical differences were found *between the average growth scores for first-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores. The use of HFWL instruction did not significantly change the average score of first-grade students receiving beginning HFWL reading instruction and those students who are not receiving instruction based. The two-tailed results were $p = .59$; therefore, the researcher failed to reject the null hypothesis 2.

Research Question 3

RQ3: Is there a statistically significant difference *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on

HFWLs as shown by STAR Reading test scores?

$H_0$3: There was no statistically significant differences between the average second-grade students receiving beginning HFWL reading instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores.

The histograms showed nearly normal distributions (see Table 11). The *t* test is robust to some violation of normality. Based on Levene's test results, the assumption of equality of variance was found to be tenable, $F = 4.383$, $p = .0678$. An independent-samples *t* test was conducted to evaluate the effect on Second Grade students' STAR Reading test scores between those students who *received beginning HFWL reading instruction* and those who did not. The test was not significant, $t = -0.162$, $p = .872$. Students who received HFWL reading instruction did not post significantly higher STAR Reading test scores ($M = 129$, $SD = 151$) than those who did not ($M = 127$, $SD = 112$). The 95% confidence interval for the difference in means was 29.95. The inferential test for effect size indicated that 22% of the variance of the reading score was accounted for by the treatment. Based on Cohen's (1988) threshold of .2 for small, .5 for medium, and .8 for large, the effect size was small.

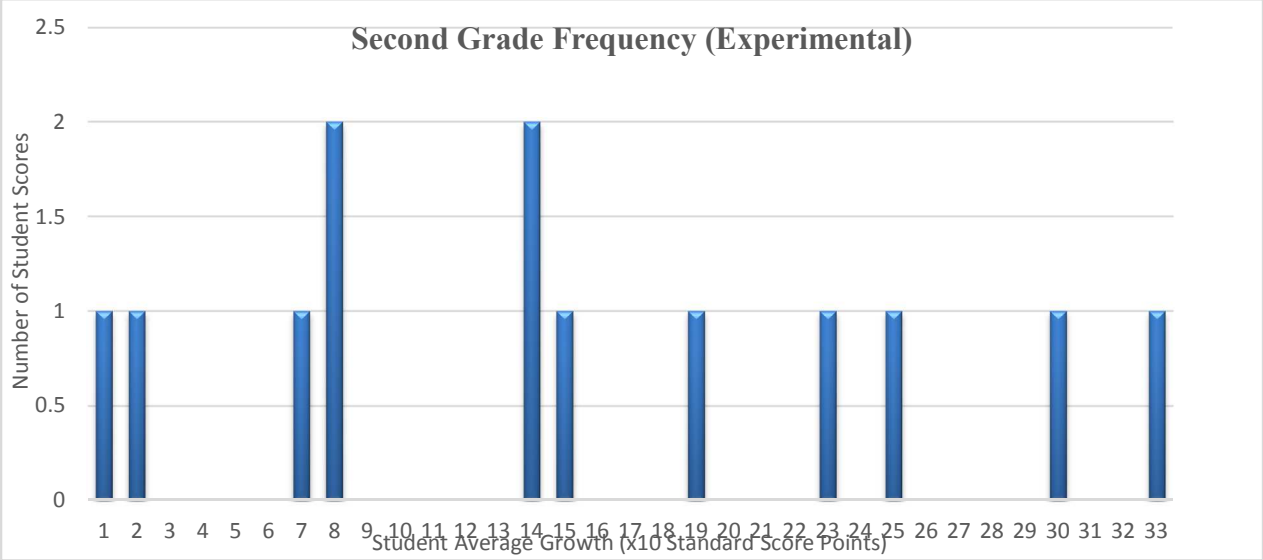
Table 10

Two-Sample Test for Equality of Variances (Levene's Test)

Variable	Second-grade frequency control	Experimental
M	1.424242	0.393939
Variance	1.626894	0.371212
Observations	50	16
df	32	32
F	4.382653	
$P(F \leq f)$, one-tailed	.07832	
F critical, one-tailed	1.804482	

Table 11

Histogram for Second-Grade Experimental Frequency Score



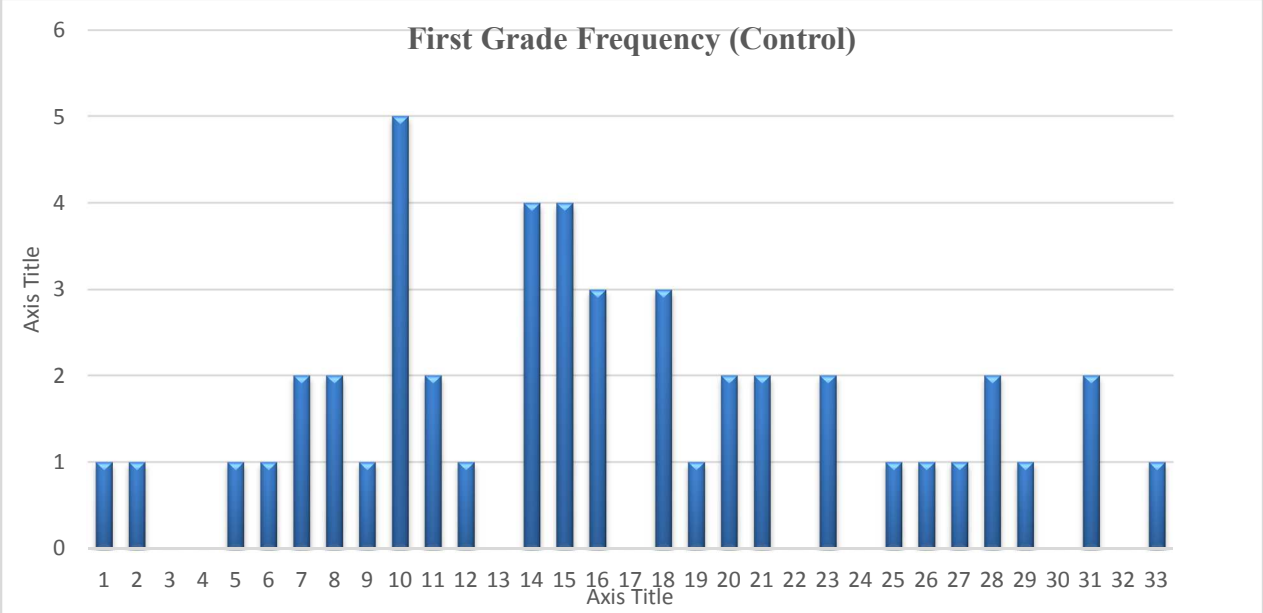


Table 12

t Test for Second-Grade STAR Reading Test Scores

Variable	Experimental	Control
M	129.3	127.2
Variance	8703.85	2481.403
Observations	16	50
Pooled variance	3917.352	
Hypothesized *M* difference	0	
df	65	
t stat	-0.16167	
$P(T \leq t)$, one-tailed	.436033	
t critical, one-tailed	1.668636	
$P(T \leq t)$, two-tailed	.872065	
t critical, two-tailed	1.997138	

Note. Two-sample assuming equal variances.

No statistical differences were found *between the average growth scores for second-grade students receiving beginning HFWL reading instruction* and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores. The use of HFWL instruction did not significantly change the average score of second-grade students receiving beginning HFWL reading instruction and those students who are not receiving instruction based on HFWLs. The two-tailed results were $p = .87$; therefore, the researcher failed to reject the null hypothesis 3.

Summary

This research shows that there were no statistical differences in the average STAR Reading scores for the control group versus the research group. This lack of differences extended through separation of scores based each individual grade.

An independent-samples *t* test was used throughout the analyses. Sample size was a concern, as the class sizes were all between 14 and 16 students spread over three classes

per grade. Due to these concerns, an average growth was used across the grades, and all analyses were based on the average growth of beginning of year versus end of year for both control and researched groups, as well as comparing them to total district averages. Still no significance was shown. The independent variable of HFWL-based instruction was compared to the dependent variable of STAR Reading test scores that all students within these sample and control groups take at both the beginning and end of the study, following the semester schedule of the school district.

CHAPTER FIVE: CONCLUSIONS

Overview

This chapter discusses the results of the statistical analysis of the STAR Reading scores, the implications of the results, and the limitations of the study. Suggestions for future research are recommended.

Discussion

As Dolch (1948) and later Fry (1989) and others have postulated, HFWLs can assist students in learning the most common words they would typically experience, not just in print but in social interaction with others. The purpose of this quantitative, quasi-experimental study was to test the theory of using HFWL-based instruction when teaching beginning reading instruction and to discern if there was a statistically significant difference in the overall STAR test improvements in reading when compared to students who did not receive such instruction. It is important to discuss the findings of the statistical analysis of the STAR Reading scores in light of the existing literature.

The implications of these results and the limitations of the study are applicable to curriculum design and lesson plans. Starting with the famous educational behaviorist Skinner (1961) and further researched by M. B. Harris (1972), Armbruster, Lehr, Osborn, and Adler (2003), Nation (2001), Vaugh (2003), and others, the idea that students can benefit from the memorization and practice with sight words and HFWLs has a debated history. That debate makes no great advances nor does it establish any new positions in light of this research.

No statistical differences were found between the average growth scores for Kindergarten students receiving beginning HFWL reading instruction and those students who were not receiving instruction based on HFWLs as shown by STAR Reading test scores. Overall average growth scores were slightly lower (242 versus 247) for the experimental group, perhaps even suggesting that HFWL-based instructions may hinder the reading abilities of these students. This supports the research completed by Bender and Larkin (2003), Lonigan and Shanahan (2009), Blackwell-Bullock et al. (2009), Flanigan (2007), Johnston et al. (2015), and Balu et al. (2015) in that they all agreed rote memorization and other word list-based instruction is ineffective.

Balu et al. (2015) stated that no definitive word recognition percentage exists when trying to measure beginning reader accuracy and fluency. Most schools use a RtI program (Balu et al., 2015), but these RtI schools also have trouble demonstrating a best practices model. Correlations of beginning reading strategies and subsequent reading performance have been the bases for recommendations that perhaps the best approaches for raising children's reading levels is to improve literacy-related skills before they begin school.

Developing a large vocabulary has been linked to greater academic success (Barry, 2008) and higher overall reading achievement (Graves et al., 1982; Stahl, 1986), as well as being an integral precursor to learning to read (NRP, 2000a). Research has indicated that teaching beginning reading lessons based on specific and systematic word lists and word-learning strategies can build students' vocabularies and improve the comprehension of material that contains the list words (McKeown, Beck, et al., 1985; Stahl & Fairbanks, 1986).

Also, no statistical differences were found between the average growth scores for first-grade students receiving beginning HFWL reading instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores. Overall average growth scores were slightly lower (128 versus 131) for the experimental group, again suggesting that HFWL-based instructions may hinder the reading abilities of these students. This supports the research completed by Bender and Larkin (2003), Lonigan and Shanahan (2009), Blackwell-Bullock et al. (2009), Flanigan, (2007) Johnston et al. (2015), and Balu et al. (2015) in that they all agreed rote memorization and other word list-based instruction was ineffective.

Most educators have agreed with reading researchers that vocabulary and sight word development is of high importance to improving reading comprehension (Anderson & Freebody, 1981; Baumann et al., 2003). Sight words are lists of words that are often difficult for students to decode using common rules of the English language. The words may have irregular letter patterns and may often present a challenge to students engaged in beginning reading instruction. Some research has shown that the most effective way to make use of sight words is to use a HFWL (Storkel & Morrisette, 2002).

Sight word lists are typically taught in rote memory fashion or in conjunction with textual clues and through grouped pattern repetition. Sight word lists are developed by teachers in many ways, including rhyming words, words found around the home, and number words. Supporting research has shown merit in several forms of list development, and there is well-established historical and anecdotal evidence proving these lists (Morrisette & Gierut, 2002). Educators often have their favorite way of teaching vocabulary sight words. Although they may not have conducted formal research

regarding their own lists, they stand the test of time. Teachers are usually interested in improving their students' success, and they know that when something does not work, they need to change it.

Armstrong (1994) discussed the need for educators to focus on manipulating words and using hands on activities to cement the learning of basic words. Hargis and Gickling (1978), Bender and Larkin (2003), and Coles (2002) all showed that rote memorization, sight words, and high frequency words are not very effective strategies for teaching reading. Many researchers have believed that beginning reading strategies should be student-driven and be provided through text-rich environment without antiquated memorization techniques (Claessens et al., 2009; Lonigan & Shanahan, 2009).

Finally, there were also no statistical differences found between the average growth scores for second-grade students receiving beginning HFWL reading instruction and those students who are not receiving instruction based on HFWLs as shown by STAR Reading test scores. Overall average growth scores were slightly higher (129 versus 127) for the experimental group, suggesting that HFWL-based instructions may be an effective strategy for these students. This supports the research completed by McKeown, Beck, et al. (1985); Stahl and Fairbanks (1986); Anderson and Freebody (1981); and Baumann et al. (2003).

The theory put forth in this research was that when students are exposed to HFWL instruction on a regular basis, their reading scores will improve. The purpose of this study was to examine the effect of HFWL-based reading instruction and its effects on STAR Reading test scores. This research was necessarily conducted in a quasi-experimental design due to the inappropriateness of randomly assigning individual students to learning

groups without the framework of a normal classroom and educational setting. Only certain classes were given the differentiated instruction being researched.

As with all forms of education, the most important goal was the continuing education of the students; therefore, a true experimental design could not be used due to the logistical difficulties of using public school classrooms as test areas. This research design was chosen to test the possible connection, if any, between STAR Reading test scores and added beginning reading instruction based on HFWL. The independent variable of HFWL-based instruction was compared to the dependent variable of STAR Reading test scores that all students within these sample and control groups will take at both the beginning and the end of the study, following the semester schedule of the school district.

The information garnered from this study is immediately applicable to all teachers and service providers who engage in beginning reading instruction and who use current children's literature as a foundation for their reading lesson planning. The problem is that most educators who teach beginning reading develop both reading and spelling lessons based on HFWLs, but there is little evidence proving if these lists can improve STAR Reading test scores. STAR testing is high-stakes testing used to determine the overall effectiveness of both teachers and programs. There is a need for research studying the effectiveness of educational methods based on these lists, and they should be tested in easy reading practice trials to prove to teachers and other stakeholders the worthiness of teaching from HFWLs.

An independent-samples *t* test was conducted to evaluate the effect on students STAR Reading test scores between those who *received beginning HFWL reading*

instruction and those students who did not. The test was not significant, $t = -0.548$, $p = .585$.

Kindergarten students who received HFWL reading instruction posted lower STAR Reading test scores ($M = 242$) than those who did not ($M = 247$). First-grade students who received HFWL reading instruction posted lower STAR Reading test scores ($M = 128$) than those who did not ($M = 131$). Second-grade students who received HFWL reading instruction posted higher STAR Reading test scores ($M = 129$) than those who did not ($M = 127$). The 95% confidence interval for the difference in means was 37.55 (see Tables 4, 7, and 10). For all three research questions, there was no growth reported that was statistically higher or lower than the control groups.

These numbers support the ideas of Bender and Larkin (2003) and Lonigan and Shanahan (2009) in that word list instruction is often not as effective as other reading instruction strategies. All word lists take words out of context and are studied in isolation, independent of any book, story, or text. Blackwell-Bullock et al. (2009) stated that Kindergartners and other early readers cannot effectively recognize list words without any textual context. Flanigan (2007) stated that words must be read within relevant text to be learned effectively. Johnston et al. (2015) discussed the need for readers even in pre-Kindergarten to see and become familiar with sight words embedded in appropriate text. Perhaps most telling is the research by Balu et al. (2015), who showed, "For students . . . in Grade 1, reading interventions did not improve reading outcomes; it produced negative impacts" (p. 76).

Implications

This study concluded that the use of HFWL-based reading instruction did not significantly improve reading scores as measured by the STAR Reading test. HFWL-based reading instruction could be one tool in teaching reading, but it by no means represents an improvement in teaching strategy. In fact, HFWL-based reading instruction did not statistically increase any STAR Reading scores; and in Kindergarten and first grade, the students who were given the experimental HFWL-based instruction saw lower scores than their counterparts.

Teachers who choose to use this style of instruction should not use it in isolation; rather, they should have a wide variety of differentiated instruction to reach as many students as possible. The implications for administrators and teachers are that they should feel free to choose whether to base their beginning reading instruction on HFWLs. The information garnered from this study is immediately applicable to all teachers and service providers who engage in beginning reading instruction and who use current children's literature as a foundation for their reading lesson planning. The problem is that most educators who teach beginning reading develop both reading and spelling lessons based on HFWLs, but there is little evidence proving if these lists can improve STAR Reading test scores. STAR testing is high-stakes testing used to determine the overall effectiveness of both teachers and programs.

There is a need for research studying the effectiveness of educational methods based on these lists, and it should be tested in easy reading practice trials to prove to teachers and other stakeholders the worthiness of teaching from HFWLs. These findings do not necessarily mean teachers need to abandon HFWL-based instruction; rather, they

should incorporate it into a pragmatic approach to beginning reading instruction. Sousa (2005) reminded us that if we do not use a learned concept, we will forget it. Teachers should be encouraged to develop a wide variety of teaching strategies and activities to attempt to reach all students as often as they can. Amendum et al. (2017) implied that many publishers in the business of beginning reading instruction reflect "mandates of state legislatures and advocacy of special interest groups more than evidence from theory or research" (p. 32; Mesmer et al., 2012).

This research helped address the gap in relevant literature by adding to ideas postulated by other researchers (Connor, Farris, Jewkes, & Morrison, 2007; Dawson, Rastle, & Ricketts, 2017; Graham, Liu, et al., 2017; National Institute of Child Health Development, 1997) that there is no magic solution to teaching beginning reading to students in Kindergarten through second grade. Rather, a multifaceted approach that takes individual student needs into account should be used. HFWL-based instruction can live on in the beginning reading classroom, but by no means should it be considered more effective than any of the other research-based methods of instruction. Close watch needs to be kept on using this type of instruction. As in the case of this research and several other studies, word list-based instruction can actually slow overall reading progress.

Limitations

The main limitation to this research was sample size. Results indicate that (a) insufficient sample sizes lead to suboptimal segmentation solutions, (b) biases in survey data have a strong negative effect on segment recovery, and (c) increasing the sample size can compensate for some biases (Floh, Zauner, Koller, & Rusch, 2014). This research was conducted on one class per grade level with each class containing 14-16

students. This experimental group may not adequately represent the potential of HFWL-based reading instruction for this school, this district, or even this geographical area.

Recommendations for Future Research

It is recommended that further research into HFWL continue to discern if other methods of teaching HFWL-based reading provide higher tests scores and more learning for beginning reading students. The limited amount of time and activities included in this study may not have been enough to discover the effectiveness of HFWL-based instruction. Future studies should be conducted over a broader period of time to ensure that students have mastered sight words. Longitudinal studies of the effectiveness of HFWL could provide additional insight. Also, this study looked at the achievement of all students. Future studies should examine the impact of HFWL on strong students separately from academically weaker students to determine if HFWL benefit gifted or nongifted students differently.

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APPENDIX A: IRB APPROVAL

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

January 8, 2015

Michael Andrew Foster
IRB Exemption 2013.010815: A Study of the Effectiveness of High-Frequency, Word-List Instruction on STAR Reading Test Scores

Dear Michael,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(1, 4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
> (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

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APPENDIX B: SCHOOL PERMISSION LETTER

[redacted] School

[redacted] School's mission statement is "explore today to discover tomorrow".

[redacted] Principal

[redacted] Assistant Principal

[redacted]

[redacted]

August 27, 2014

Michael Foster
Doctoral Candidate
Liberty University

As principal of [redacted], you have my permission to use the [redacted] School STAR Enterprise scores for the completion of your dissertation. This is based upon the student names being anonymous.

Respectfully,

[redacted]

[redacted]