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Examining Student Reading Gains Based on Vocabulary Instruction based on Morphemic and Definitional Approaches

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EXAMINING STUDENT READING GAINS BASED ON VOCABULARY
INSTRUCTION BASED ON MORPHEMIC AND DEFINITIONAL APPROACHES
by

Jessica Lea Parthemore

A thesis to be submitted in partial
fulfillment of the requirements for the degree of
Educational Specialist

By

JESSICA LEA PARTHEMORE
M.Ed., Wright State University, 2012

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July 30, 2015

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Jessica Lea Parthemore ENTITLED Examining student reading gains based on vocabulary instruction based on morphemic and definitional approaches BE ACCEPTED IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE DEGREE OF Educational Specialist.

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ABSTRACT

Parthemore, Jessica Lea. Ed.S., Department of Leadership Studies, Wright State University, 2015. Examining Student Reading Gains Based on Vocabulary Instruction Based on Morphemic and Definitional Approaches.

There has been a multitude of research about the effect of vocabulary instruction on reading achievement. The purpose of this study was to further examine the effectiveness of specific methods of vocabulary instruction, definitional and morphemic, as measured by reading achievement on the Measures of Academic Progress (MAP) assessment. This research study focused on 5 suburban classrooms in the Midwest, three teaching definitional methods and two teaching morphemic methods. The data were analyzed using a 2 X 2 ANOVA to determine which method had the most effect on reading achievement, definitional or morphemic. The analyses revealed that there is a significant effect of method of vocabulary instruction on reading achievement. The definitional instruction group showed more growth from fall 2014 to spring 2015; however, the morphemic instruction group experienced greater achievement. Teachers self-reported incorporating other methods of reading and vocabulary instruction into literacy instruction, as well as multiple opportunities to engage in vocabulary discussion and activities related to word lists and/or morphemes studied. Overall, students' reading achievement scores benefited from vocabulary instruction.

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DEDICATION

In loving memory of my grandfather, Dallas Parthemore. Par—You encouraged and supported me in all of my endeavors, this one's for you!

I. INTRODUCTION TO THE STUDY

Vocabulary instruction has been part of educational practice for decades. The importance of having a prolific vocabulary has been well documented as necessary for meeting many educational goals and objectives. Unfortunately, as current trends emphasize the importance to teach deeper and include more analytical processes, vocabulary instruction is often the first facet of instruction to be given less time or removed from the instructional day altogether. The National Reading Panel (2000) identified vocabulary instruction as one of ten important areas of literacy instruction, as well as emphasized the important connection between vocabulary knowledge and reading comprehension. Vocabulary instruction can, and should, be an important instructional tool to further enrich instruction and to improve all students' access to higher level cognitive, analytical, and independent learning.

As students advance through grade levels, the task of reading takes on additional importance: reading to learn information for themselves. Students who struggle in reading benefit from vocabulary instruction, as it provides additional access to improved decoding strategies. Vocabulary knowledge and awareness allow for the cognitive functioning of the student to begin to focus on the more difficult, and higher order, comprehension tasks, such as making inferences and interpreting figurative language and less on deciphering what the words on the page actually mean (Elleman, Lindo, Morphy, & Compton, 2009).

There is evidence that a link between reading comprehension and vocabulary knowledge exists (Francis & Simpson, 2003). The link could be due to the act of reading requiring the reader to have the ability to pay close attention to the denotation and connotation of words, using the lower level skills of decoding and word call, which can often lead to a breakdown in comprehension (Nagy, 2007). If a student is working to decode and understand words at a most basic level of comprehension he or she is unable to access higher order thinking skills, such as inferring, analyzing, or synthesizing information. Based on her research of students' reading patterns, Carlisle (2007) had compelling reasons to suggest that when students believe they are able to analyze unfamiliar, or difficult, words in a text, they will naturally expend the mental energy needed to read the text closely and garner additional, and deeper, understanding. Students who have established a comfort level with decoding unfamiliar words will be able to move to independently comprehend and will retain information from more rigorous texts, as well as begin to think more critically about what information is being read. Developing word-decoding skills, beyond recalling individual words and meanings, improves a student's ability to access and comprehend more rigorous texts.

Multiple methods of vocabulary instruction are used throughout classrooms in the United States. The research study examines morphemic analysis, the study of individual morphemes or word parts, and definitional instruction, providing students with a prescribed list of words and definitions to be quizzed over at a later time. The study hypothesized that morphemic vocabulary instruction will show more impact on student

reading achievement scores, as measured by the Measures of Academic Progress (MAP) assessment than definitional vocabulary instruction. Additionally, teachers recorded minutes of direct vocabulary instruction over a six-week time period on instructional time logs and participated in a follow-up questionnaire. Responses from instructional time logs and the questionnaire were used to garner a better understanding of vocabulary instruction in participating classrooms.

Statement of the Problem

Students encounter approximately 10,000 new words each year and naturally acquire, or determine the meaning, of 2,000 to 3,000 words. Their ability to understand these words in the classroom, or encountered in authentic settings, has a significant impact on their comprehension (Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003; Elleman et al., 2009). In this study, vocabulary instruction methodology and instruction frequency will be examined to study the impact on reading achievement. The study's purpose was to determine which instructional method is more effective than another, when comparing morphemic analysis instruction (target group) to definitional instruction (comparison group) as measured by the MAP assessment. Student achievement gains on the MAP assessment were utilized to measure reading achievement. Teacher logs of instruction were analyzed to determine the amount of instruction spent on vocabulary. A follow-up questionnaire was given to participating teachers to provide additional insight into participating teachers' philosophy of vocabulary instruction and actual vocabulary instruction engaged in during the study.

Definition of Terms

The following terms were operationally defined for this study:

- Morpheme—the smallest unit of meaning in a word (Kieffer & Lesaux, 2007).
- Morphemic Analysis—the ability to break down morphemes to determine the meaning of a word (Kieffer & Lesaux, 2007).
- Measures of Academic Progress (MAP) Assessment—computerized, adaptive assessment in reading and math, created and maintained by the Northwest Evaluation Association (NWEA) in 2000 that allows for teachers and administrators to compare growth, and predict achievement, over time. The assessment can be administered in Grades 2 – 12.
- Student Achievement—the progress a student makes in academic subjects (Buddingh, 2009).
- Rasch Unit (RIT) Scale—psychometric model for analyzing assessment responses used by NWEA on the MAP assessment (NWEA, 2014).
- Growth in reading—the progress in reading a student makes, as determined by change in RIT scale score on fall and spring MAP assessment administrations (Buddingh, 2009).

Hypothesis

Research Question 1: What is the difference in student reading gains based on vocabulary instructional programs (morphemic analysis or definitional vocabulary) as measured by the RIT scale scores of the MAP assessment?

Null hypothesis 1: There is no difference in reading score gains, as measured by the RIT scale scores of the MAP assessment, between morphemic analysis and definitional vocabulary programs.

Hypothesis 1: Students instructed using the morphemic analysis vocabulary program have higher reading gains, as measured by the fall and spring RIT scale scores of the MAP assessments, than those instructed using the definitional vocabulary program.

Research Question 2: How is time spent on vocabulary instruction in each class?

Assumptions

The following assumptions were acknowledged for this study:

- Students completed the MAP assessment with their best effort.
- Standardized test protocols were followed during MAP administration.
- Teachers honestly, and accurately, reported their vocabulary instruction in logs for the time period of the study.
- MAP assessments results were recorded and reported accurately.
- Student ability and teacher instruction between morphemic vocabulary groups and definition vocabulary groups are comparable.
- Uninterrupted instructional time, or time where there were no scheduled events to interrupt instruction, for students during the instructional time log study period.

Scope

The scope of this study is limited to two fifth grade classrooms in the researcher's school of employment and three fifth grade classrooms in the definitional analysis vocabulary school. Both schools are located in large districts in suburban Midwestern cities. The definition vocabulary school was selected because it was comparable to the researcher's school in student demographics. Participants are teachers who elected to participate. The results of this study cannot be generalized to other school settings.

Researcher Bias and Positions

The researcher was a fifth grade Language Arts teacher, whose knowledge in reading and vocabulary instruction exceeds a typical educator, holding a Bachelor's degree in Middle Childhood Education, with an emphasis in Language Arts, Social Studies, and Reading. Master's degrees in Classroom Teacher and Teacher Leader have also been obtained. In vocabulary instruction alone, the researcher has completed more than 32 professional development contact hours. Study results may be influenced by the researcher's educational experiences.

The other participating teachers are seasoned instructors and are described by their administrator as good and effective literacy teachers. They have not actively sought out specific literacy, reading, or vocabulary professional development. The teachers' district had conducted book studies focusing on core instructional methods to be used in all content areas. All three teachers hold licenses in Elementary Education (grades 1 – 8) and have obtained Master's degrees in education.

Significance of the Study

This study offers further credibility to previous research describing the relationship between morphemic vocabulary instruction and reading achievement. This study is significant because it supports and adds to the extant of research supporting vocabulary instruction as a means to improve reading achievement.

Overview

Vocabulary is an important component of a comprehensive Language Arts curriculum (National Reading Panel, 2000). There is significant research establishing the link between vocabulary knowledge and instruction to student achievement (Baumann et al., 2003; Elleman et al., 2009). A comprehensive review of the literature is compiled in Chapter II. There exists a gap in current literature and research regarding which methods of vocabulary instruction are more effective than others. Chapter III describes the relationship between vocabulary and achievement, as well as quantifies the impact of both models. Analysis of data collected during the study is presented in Chapter IV. Chapter V provides results as organized by research questions, as well as conclusions and recommendations for future research.

II. REVIEW OF THE LITERATURE

Vocabulary knowledge directly relates to student achievement by allowing students to independently access more information in the academic content areas. If students improve their independent reading comprehension abilities, their individual performance and general academic abilities will be improved. Instruction in vocabulary in the content areas, as well as in language arts classrooms, has been found to enrich content area instruction and improve student comprehension abilities (Baumann et al., 2003). This review discusses current vocabulary instructional methods, provides evidence supporting vocabulary instruction, provides arguments for why vocabulary instruction is not currently being taught in the classroom, and presents gaps in current research.

Vocabulary Instructional Strategies

The question of which instructional method leads to the most vocabulary gains and the strongest vocabulary garners attention and becomes the subject of many educational research studies. There are a multitude of answers to this question; however, there is no prevailing standard for vocabulary instruction identified in the presented literature. The study utilizes a conceptual framework provided by Marzano (2009). This framework outlines six steps for introducing and assisting students with vocabulary acquisition. Marzano's steps include: (1) providing the new word's description, explanation, or example; (2) asking students to create descriptions, explanations, or examples of the new word; (3) asking students to create a visual representation of the

word; (4) engaging in activities that aid in adding to individual word knowledge; (5) student discussion of the word; and (6) playing games to continue to use and explore the word. This framework can be used with a variety of vocabulary instructional strategies.

Wanzek (2014) conducted an observational study of multiple classroom settings that incorporated 193 students. The study's observed classrooms included general and intervention education settings. Observations were conducted over multiple days and times to determine the type of instruction occurring throughout the day. The author determined, using a pre-determined coding system, an average of 8%, or seven minutes per session, of reading instruction focused on vocabulary and could range from no instruction on a given day to over 22 minutes on another. Average reading instruction blocks were 1 hour and 29 minutes in length. She concluded 77% of vocabulary instruction in a second grade classroom was spent solely on definitions and examples of meaning. No conclusion of what instructional strategies work best for vocabulary gains was made in this study.

Sixty percent of words encountered by students each year are derivational words. Derivational words are words derived from Greek and Latin roots and can be decoded through analysis. Ten percent of words learned by students each year are learned through intentional word study (Carlisle, 2007). Due to the high demand on the students' vocabulary processes each year, students' vocabulary knowledge must occur quickly and efficiently. Vocabulary instruction is a key determinant in attaining vocabulary knowledge.

Regardless of the specific method of vocabulary instruction, students made gains in their academic vocabularies. Students can achieve more academically with the assistance of knowledgeable adults than when students are working on their own. Providing an added, and intentional, focus on word meanings through discussion, strategies, semantic mapping or multiple exposures to words has produced higher levels of vocabulary achievement on testing measures (Apthorp, 2006; Boulware-Gooden, Carreker, Thornhill, & Joshi, 2007; Butler, 2007; Elleman et al., 2009; Kelley, Lesaux, Kieffer, & Faller, 2010). Baumann et al. (2003) studied 157 fifth grade students in three experimental conditions receiving morphemic analysis, contextual analysis, or definitional vocabulary instruction in the social studies classroom. Teachers were interviewed and completed a questionnaire throughout the study to generate additional information concerning instruction. All students showed growth on standardized assessments when the two pre-assessments were used as covariates in quantitative analyses to the seven post-assessments in content area and vocabulary knowledge, regardless of treatment condition. Baumann et al. (2003) performed a number of analyses on the data, including an analysis of covariance (ANCOVA) to assist with the analysis to determine the treatment effect. Students in the classes receiving textbook definition lessons outperformed the classrooms receiving contextually or morphemically driven lessons, $F(1, 6); p < 0.002; \eta^2 = 0.179$ as determined by the Textbook Vocabulary Test. Those same students achieved significantly less than their peers on the Word Part Test $F(1, 6); p < 0.031; \eta^2 = 0.423$. Both groups of students showed significant gains on

the Comprehension Test, $F(1, 6)$; $p < 0.017$; $\eta^2 = 0.000$ and in content knowledge tests ($p < 0.000$); however, there was no significant difference among the groups. The study conducted by Baumann et al. demonstrated that students receiving any form of vocabulary instruction academically benefit and are able to make significant achievement gains in reading.

Research involving three methods of vocabulary instruction is referenced in this review: definitional, contextual analysis, and morphemic analysis strategies. The methods were used in isolation or as a part of a comprehensive literacy program in studies relating vocabulary instruction with student achievement.

Definitional Strategies

Using word definitions as a strategy to increase vocabulary has been used in classrooms for many years. The Friday quiz or test continues to be a popular strategy for vocabulary development. The drawbacks are two-fold: students are only exposed to the specific words included on the test or quiz, and students do not develop strategies to decode unknown words through memorizing word definitions for a one-time test. Students made minimal vocabulary gains on post assessments and demonstrated minimal ability to transfer vocabulary awareness to new situations due to the number of words not taught (Baumann et al., 2003; Jenkins, Matlock, & Slocum, 2014).

Individual strategies to teach vocabulary using definitions vary greatly. Students may be able to independently identify definitions from a textbook glossary or classroom dictionary with some modeling to use the text features. Providing student-friendly

definitions for students to complete in a chart, semantic map, or journal has also been found to be helpful and effective. Semantic maps can also be used to connect prior knowledge, highlight word parts, parts of speech, and other features (Baumann et al., 2003; Boulware-Gooden et al., 2007; Butler, 2007; Nash & Snowling, 2006). Moreover, when providing definitions to students, teachers may compare and contrast word meanings or taking a positive/negative approach, saying what the word is and is not. Additionally, students and teachers can work together to predict the meaning of words and use dictionaries to verify predictions and provide additional information (Baumann et al., 2003).

Repeated exposures to the words and definitions are necessary for students to develop a working understanding of the targeted words (Jenkins et al., 2014). Teacher modeling, scaffolding, and reinforcement of skills over time will be necessary for students to transfer learned skills and words taught using definitional strategies to new situations.

Contextual Analysis

Another vocabulary instructional strategy referenced in the research presented in this review is contextual analysis. Contextual analysis refers to being able to identify words not understood in a text by using the context of the sentence or setting. Students can be taught contextual strategies and to infer word meanings immediately after instruction (Baumann et al., 2002). Such strategies become increasingly important as students progress through school and enter the workforce.

Many contextual analysis strategies require modeling and scaffolding to start. When encountering words that are unknown, activating students' prior knowledge to create their own definition and check for understanding is effective. Using the same unknown words to create new sentences or using the words in context can assist with additional exposures and beginning the development of a working knowledge of the word (Curtis, 2008; Nelson & Stage, 2007).

Semantic maps are used frequently to develop a deeper understanding of words found in context. Using the maps to identify word clues in the sentence, such as definitional words, synonyms, and antonyms, aids in understanding and provides a visual representation of the word. Colored pens or highlighters can be used to select the clues in the text while filling out the map to further model what may aid in understanding. Maps can also assist in making the connection between what students know about a word and the actual definition (Curtis, 2008; Nash & Snowling, 2006).

Jenkins, Matlock, and Snowling (2014) developed an acronym strategy that assists students in remembering the steps of contextual analysis. Students (s)ubstitute a word or expression for the unknown word, (c)heck the text for clues that support the student's hypothesized word or expression, (a)sk if the substitution fits the context, determine if a new idea is (n)eeded, and finally (r)evise the idea to fit the context, or SCANR. SCANR was determined to be effective in helping students use contextual clues to infer the meaning of words. Results were gleaned from pre- and post-test analysis of variance (2X3) to compare individual meaning instruction and contextual

analysis. The contextual analysis group achieved higher scores on a basal context test, $F(1, 126)$, treatment $p < 0.02$, $F(2, 126)$, practice $p < 0.03$, and a deriving word meaning test, $F(1, 127)$, treatment $p < 0.06$, $F(2, 127)$, practice $p < 0.06$. Throughout the study, the amount of practice (high, medium or low) provided to the students was examined. Teacher modeling of the strategy, as well as the ability to locate clues using signal words, phrases, examples, synonyms, and antonyms was determined necessary for the contextual analysis strategy to be successful (Curtis, 2008; Jenkins et al., 2014).

A teacher's ability to model his or her own thinking and cognitive strategies, as well as providing a balance of teaching words with the teaching of word learning strategies, can assist students in stretching their own thinking and processing to further their comprehension of increasingly difficult text (Kelley et al., 2010; Butler, 2007). Kelley et al. (2010) designed a study that introduced 476 students in sixth grade to 18 weeks of targeted academic vocabulary instruction. Teachers were trained in instructional methods that included discussion and modeling of cognition as contextual analysis strategies. The researchers administered pre- and post- standardized Gates-MacGinitie reading comprehension assessments to determine knowledge gained in both reading and vocabulary comprehension. Additionally, participating teachers completed instructional logs and their classroom instruction was observed. Approximately 80% of the curriculum was implemented as designed. At the completion of the study, students demonstrated improved abilities at breaking down unknown words into word parts, and

there was also an increase in the students' reading and vocabulary standardized assessment scores.

A student's proficiency in using contextual clues to infer meaning denigrate if contextual clues are not modeled and reinforced. Contextual analysis skills can, and should, be used in conjunction with other vocabulary strategies to further independent word comprehension skills (Baumman et al., 2002). One common educational goal is to foster students' abilities at transferring their acquired knowledge to new and unique situations. Teaching vocabulary strategies improves students' metacognitive and analytical strategies to help learning in new situations and in natural, independent reading (Boulware-Gooden et al., 2007; Nash & Snowling, 2006). A study of six third grade classrooms in two urban settings demonstrated that using metacognitive instruction through associated words increased student performance on standardized vocabulary measures and allowed students to develop a deeper understanding of the words studied. The participants were divided into intervention and control groups and took a pre- and post-test to determine results. Data were analyzed using a 2X2 repeated measure factorial ANOVA. The intervention group showed significant gains in vocabulary, $F(1, 117) = 22.521, p < 0.001$, with an effect size of 0.161, and in reading comprehension, $F(1, 117) = 4.28, p < 0.41$, with an effect size of 0.41 (Boulware-Gooden et al., 2007).

A computer-based program called *Thinking Reader* was designed to improve adolescent literacy skills through vocabulary acquisition and reading comprehensions strategies. Methods used in the software include reciprocal teaching, contextual analysis,

and definitional vocabulary strategies. The study, conducted with sixth grade students, was designed to determine the impact the software had on students' vocabulary and reading comprehension. Results of the study demonstrated *Thinking Reader* did not have an impact on students' vocabulary acquisition or reading comprehension as compared to students in a setting that used a traditional approach to literacy instruction (Drummond et al., 2011).

Another researcher focused on the effectiveness of the Kindergarten PAVEd for Success (K-PAVE) program. The K-PAVE program was designed to train teachers on using enhanced instructional strategies that assist students with developing multiple strategies for continuous vocabulary development. Vocabulary instructional strategies embedded within the program include contextual analysis and definitional strategies. The study included kindergarten students in 65 schools in the Mississippi Delta region of the United States, encompassing 1,319 students between the control and intervention schools. Results of the study revealed that students in K-PAVE classrooms made a statistically significant improvement, with a standardized effect size of 0.14 standard deviation for each measure in students' vocabularies and academic knowledge. Teachers also reported a change in their instructional routines to provide additional emphasis and discussion on vocabulary in regular instruction (Goodson et al., 2010).

Morphemic Analysis

Teaching morphemes, or word roots, in vocabulary instruction assists students with inferring the meanings of words, an effect that can be seen immediately following

the instruction. Morphemic analysis is the process of breaking down the morphemes, or smallest unit of meaning of a word. The terms *word root*, *root word*, or *root*, are used throughout this document to describe prefixes, suffixes, and bases, while the term *word foundations* will be used to describe the knowledge of word parts and word families (Rasinski et al., 2008). For example, the word *biology* contains two roots or morphemes: “bio-,” meaning life, and “-ology,” meaning the study of something. Most English academic words students encounter are derived from Greek and Latin roots. These can be some of the most challenging words, especially to a student who struggles with reading. One root can lead to the understanding of at least 20 additional English words through analysis and application of known roots (Rasinski et al., 2011). Students having vocabulary instruction in morphemes are able to generalize their newly acquired knowledge and skills to assist with deriving novel words’ meanings containing the same morphemes (Baumann et al., 2003). Morphemic analysis differs from contextual analysis by examining an unknown word’s individual word parts instead of examining an unknown word’s narrative context.

When beginning to teach morphemes and morphemic analysis in the classroom it is important for teachers to help students understand the purpose of root words and the role morphemes play in word decoding and comprehension. Rasinski, Padak, Newton, and Newton (2011) suggested focusing on the most meaningful word patterns, such as the base *trac/tract* meaning to pull, draw, or drag, and include morpheme lists in their published research. Evidence exists supporting further student comprehension gains if

there is a concentration on the Greek and Latin bases most commonly used in academic language (Abbot & Berninger, 1999; Goodwin, Lipsky, & Ahn, 2012; Kieffer & Lesaux, 2007; Pacheco & Goodwin, 2013). Researchers suggest that it is beneficial for teachers to maintain a record using word walls, journals, charts, or other methods for student reference during independent practice and further decoding as morphemes and words are being introduced. These records can also help to group words together that share common roots and roots that share a common meaning (Ferguson, 2006; Goodwin et al., 2012; Kieffer & Lesaux, 2007).

Morphemic analysis instruction is most effective when the instruction is explicit and a distinct part of the overall vocabulary program. Researchers utilized and reinforced process steps for assisting the students when the students did not know a word: analyze unknown words for known morphemes, hypothesize a meaning, and test the meaning within context (Baumann et al., 2002; Baumann et al., 2003; Kieffer & Lesaux, 2007). As students were introduced to morphemes, words were segmented, broken apart, and prior knowledge was built upon. Teachers involved within the reviewed studies helped students make connections with existing knowledge to assist with further retention and transfer of skills. Additionally, the use of discussion to explore morpheme meanings and brainstorm additional words sharing common parts was important to vocabulary acquisition (Curtis, 2008; Goodwin et al., 2012; Pacheco & Goodwin, 2013; Rasinski et al., 2011).

After introducing morphemes, additional activities are necessary to continue exposing students to the morpheme, associated words, and decoding techniques. Buddingh (2005) used charts combining prefixes with words to demonstrate how word parts build together to create new meaning (Abbott & Berninger, 1999; Kieffer & Lesaux, 2007). Students can then create charts that provide examples and definitions of the roots being learned (Ferguson, 2006; Goodwin et al., 2012). Charts are also used to model and demonstrate how words are transformed. For example, a technique called Divide and Conquer, developed by Rasinski et al. (2011), allows teachers to introduce and break down words and their parts. A variety of interactive activities such as creating symbolic posters, visual representations, and word play were used in the research to assist visual learners with expressing and demonstrating their understanding of the word (Buddingh, 2005; Rasinski et al., 2011). Lastly, encouraging students to find and decode morphemes in natural and whole class instructional reading provides connections between vocabulary instruction and real world application (Rasinski et al., 2011).

Morphemic Analysis Instructional Programs. A specific program, *Building Vocabulary*, effectively improves student vocabulary knowledge. The program contains many elements of morphemic analysis vocabulary instruction, including targeted grade level lists of Greek and Latin morphemes, modeling opportunities to dissect words together, multiple engaging activities to use and play with words, and charts to assist in understanding the segmentation and combining of words. Multiple learning style strategies, such as kinesthetic, linguistic, and spatial, are incorporated throughout the

program to bring about word awareness and provide multiple exposures throughout the K – 11 program. Students in a research study's experimental group increased their post-test scores an average of 9.52 percentage points, while the study's control group's scores showed an average increase of 3.57 points (Teacher Created Materials, 2009).

Researchers are beginning to understand that an additional emphasis on morphemic analysis aids in vocabulary knowledge (Ferguson, 2006; Kieffer & Lesaux, 2007). Struggling seventh grade students demonstrated significant gains in standardized vocabulary measures after several weeks of instruction on roots and affixes as determined by administered pre- and post-tests. A *t*-test for dependent samples was used to analyze the data and resulted in statistically significant differences between post-test means, $t(32)$, $p < 0.001$. Initial pre-test data were analyzed to ensure that overall aptitude between control and experimental groups was not statistically significant (Buddingh, 2005). A separate study documented that students who received specific morphemic vocabulary instruction had significantly better scores on multiple-choice tests of academic words, a curriculum-based measure of depth of understanding of words taught, and an assessment of the students' ability to break down words according to morphemes (Kelley et al., 2010). Morpheme analysis instruction may aid in students' abilities to break down and comprehend unknown words in new situations, leading to the future transfer of skills.

Results from a study conducted by an independent researcher demonstrated mixed results according to the setting and demographics of the students. Apthorp's (2006) study focused on the *Elements of Reading: Vocabulary* program that was used as a supplement

to regular literacy instruction. Two independent sites were established for testing the program based on volunteering schools meeting demographic eligibility requirements. Strategies used within the program included basic morphemic analysis and contextual analysis. Site A reported improvements in reading and vocabulary comprehension, while Site B reported no significant improvements. The researcher concluded that the lack of an effect in Site B could have been explained because the students in Site B had already developed a proficient vocabulary in comparison to Site A (Apthorp, 2006).

Reading comprehension skills can also be improved through the use of morphemic analysis. The ability to understand and know the smallest units of meaning in words becomes more important as students grow older and is related to reading comprehension in fourth and fifth grades (Kieffer & Lesaux, 2007; Singson, Mahony, & Mann, 2000). After administering a standardized testing battery assessing vocabulary and reading comprehension abilities in 111 fourth and fifth grade students, Kieffer and Lesaux (2007) concluded students with larger vocabularies have better morphological understanding, as well as scored higher on reading comprehension assessments. Knowledge of morphemes is important in early literacy as well, as it indicates early reading fluency (Carlisle & Stone, 2005).

Regardless of the techniques used for modeling and monitoring students' morphemic analysis skills, morpheme instruction takes time. Multiple exposures to morphemes, strategies, activities, and opportunities for discussion are needed for students to attain the skills necessary for facilitating the transfer of morphemic analysis skills to

new and independent environments (Baumann et al., 2003). Baumann et al. (2002) reported that the effect of inferring word meanings can degrade with time if the skill is not reinforced and used frequently. Using morphemes, and the associated skills, must be taught continuously and frequently to ensure ongoing development and success in decoding academic words.

Justification for Vocabulary Instruction

Teaching morphemes in the primary grades is important, as morphological skills interact with phonological skills to impact reading proficiency in young learners. Parel and Bisanz (2007) concluded that integrating morphemes and phonemes into early reading programs could aid in introducing more difficult expository and informational texts in the primary classroom. This could be an important step in meeting the rigor presented in the Common Core standards.

Another layer to the argument for vocabulary instruction is the knowledge that individuals with large vocabularies also tend to be more proficient readers (Nagy, 2007). In a longitudinal cohort study, researchers Cunningham and Stanovich (1997) concluded early reading ability and vocabulary awareness, as tested in first grade, were predictors of future reading achievement using contemporaneous correlations for the reading and vocabulary assessment outcomes for the 27 students remaining in the cohort as tested in the 11th grade, $p < 0.05$. Participants completed comprehension and vocabulary subtests of the Nelson-Denny Reading Test. Raw scores of the results were used in the analyses. Participants were also given the Peabody Picture Vocabulary Test, completed problems

from Raven's Advanced Progressive Matrices, and a battery of print exposure and general knowledge measures. A series of correlation and regression analyses were conducted on the 11th grade and first grade data. A student who struggled in reading comprehension and processes in early elementary often engaged in less reading activity, resulting in a "Matthew effect" (p. 934) of skills: those who can read, read more, while those who cannot, read less. The struggling early readers demonstrated subpar decoding skills, lack of practice in synthesizing skills, and subsequently, less success when they encountered difficult materials. Due to the negative experiences in early reading, the students read less. The lack of prolonged and frequent reading by these struggling first grade students led to less practice and less exposure to higher-level vocabulary and structure. When students have less exposure to higher-level vocabulary, they lack the skills necessary to decode more complex academic words encountered in content area courses.

While studying the relationship between reading comprehension and vocabulary has been difficult due to current testing measures' lack of relationship between vocabulary and reading in the assessment design, researchers believe that through the use of custom designed measures the relationship between vocabulary instruction and increased comprehension will be established (Elleman et al., 2009). In a study including 283 third and fifth grade students who received vocabulary instruction on words having multiple meanings, students showed significant gains on the Gates-MacGinitie Reading Tests, a standardized reading comprehension assessment, as measured by Nelson and

Stage (2007). Researchers used a 2X2X2X2 ANOVA to analyze the mean changes in experimental and non-specific treatment conditions in Condition (Experimental, Non-Specific Treatment) X Level (Low, Average) X Grade (Third, Fifth) X Change (Pre-treatment, Post-treatment). Newman-Kuel post hoc tests were utilized within subject analysis. A statistically significant effect for change was garnered in vocabulary, $F(1, 285) = 34.07, p < 0.001$. Newman-Kuels post hoc tests to the Change by Level interaction, $F(1, 285) = 20.35, p < 0.001$, determined low achieving students were more likely to demonstrate improvements in vocabulary skills than average to high achieving students. Participants in the experimental condition also demonstrated statistically significant improvements in their reading comprehension skills, $F(1, 285) = 34.07, p < 0.001$. Newman-Kuels post hoc tests to the Change by Condition interaction, $F(1, 285) = 10.68, p < 0.01$, reveal that participants in the experiment condition were more likely to show improvements in reading comprehension than those participants in the non-specific treatment condition, with the exception of high achieving fifth graders.

Another study established two groups for reading instruction, one based on reading comprehension strategies and one group focused on the introduction and understanding of text-based vocabulary (Butler, 2007). While both groups demonstrated reading comprehension and working vocabulary improvements at the conclusion of the study, the vocabulary group made more comprehension gains than the reading strategy group, as measured by the Woodcock Passage Comprehension subtest, $F(1, 56), p < 0.010$. ANCOVAs were used to analyze the data, as no difference was found between the

groups after the initial pre-test data were examined. Additional studies reported that students make comprehension gains, as much as 20% higher than comparison groups, through multiple exposures to unfamiliar or difficult words, the use of semantic mapping, and/or receiving word strategy lessons (Boulware-Gooden et al., 2007; Kelley et al., 2010).

Transferring skills takes time for students to successfully apply their knowledge independently. Supported practice to build confidence and proficiency in the skill is necessary to assist with making the skill an inherent part of the cognitive process. When students are able to transfer their learning of words and decoding strategies, decoding frustrations are reduced, and more rigorous material is made accessible. Unfortunately, many current vocabulary methods do not allow for the amount of guidance, modeling, time, or practice students need to adequately transfer their higher order thinking skills (Carlisle, 2007)

Instituting vocabulary instruction will require change by teachers to acknowledge that traditional methods of studying a set number of definitions and/or word lists are not as effective as more metacognitive strategies, and students' beliefs about vocabulary knowledge will also need to be challenged and changed (Baumann et al., 2003; Kelley et al., 2010). Nagy (2007) stated that teaching vocabulary requires more than teaching words, it requires teaching about words.

Vocabulary Instruction Decisions

Many factors contribute to the lack of vocabulary instruction in today's classrooms, including time, ability to change, and professional development. Teachers make many instructional decisions each year, one of the most important being what information receives emphasis and explicit coverage. These instructional decisions often have unintended consequences, especially regarding what is not explicitly taught. Frequently, the lack of vocabulary instruction is often one of those unconsidered consequences.

Time is one of the most valuable commodities in today's classroom. The demands of new, more rigorous standards, as well as local, state, and federal mandates have rendered adequate instruction time with students even more challenging. In a qualitative study conducted by Baumann et al. (2003), teachers reported in interviews and study logs that they do not feel there is enough time to teach the required content and teach the necessary vocabulary and vocabulary strategies. Working with the researchers, teachers in the study who were new to incorporating word learning strategies and skills into the content area discovered that vocabulary instruction did not take away or impede content area knowledge acquisition. Teachers in the experimental group covered the same amount of material, in the same time frame, as teachers in the control group, while still providing for deliberate vocabulary instruction. Teachers felt instruction was enhanced and engaging, and student understanding of the content being taught was improved.

In a questionnaire administered in conjunction with a research study, many teachers reported that the biggest challenges facing their students were inadequate subject area background, prior practice using analytical comprehension skills, as well as general literacy skills. Teachers also reported feeling unprepared to assist with those literacy skills in the content area classroom (Kelley et al., 2010). In order to be successful in teaching today's students, teachers must be aware of the importance of word analysis for all text comprehension. Teachers must be aware of the research regarding effective strategies for teaching vocabulary and comprehension, as well as be able to lead discussions with their students to help with developing ownership of the cognitive processes about the meanings of words and texts (Carlisle, 2007). Unfortunately, there is a significant lack of research to help guide teachers, curriculum developers, and administrators on which specific strategies have the most impact on students (Elleman et al., 2009). More research will be required in order to develop high quality professional development for teachers to deliver research-based, effective strategies that prepare students in their journey of learning how to read to learn.

Summary

Researchers agree that vocabulary instruction positively influences reading comprehension and achievement (Apthorp, 2006; Elleman et al., 2009; Francis & Simpson, 2003; Kelly et al, 2010). There is debate about the methods and strategies that are used to teach such an important literacy and academic skill.

The aforementioned published literature provides research findings based on implementation of vocabulary instruction utilizing a combination of the three vocabulary methods discussed in the review (i.e., definitional, contextual, and morphemic). Moreover, while the examples are isolated studies about three specific programs, the studies highlight the complexity of vocabulary instruction research, as well as the ability to identify specific programs that aid instruction and provide alternatives for teachers during vocabulary instruction. Researchers agree that students need to be highly engaged in the vocabulary activities through word play and interaction. Vocabulary instruction must be meaningful and related to what is already being taught. Discussing words together and asking higher order questions will assist in student development of analytical skills of vocabulary, and exposing students to the same words multiple times will help develop a working definition of those words. Additionally, students must be able to understand what it means to truly know a word and self-evaluate what they believe they know. Encouraging and helping students to learn how to use new words in their written and oral vocabularies will also assist in developing a word learning culture in the classroom and foster additional conversation surrounding vocabulary (Apthorp, 2006; Francis & Simpson, 2003; Kelley et al., 2010). Vocabulary instruction is an important element in the academic process and can assist in bridging the gap between content taught and content learned.

III. METHODS

The methods and design of the study are described in this chapter. Specifically, information is included regarding the research participants, data collection, and the data analysis procedures.

The mixed methods study inquired about the difference in student achievement between morphemic and definitional vocabulary instruction. Instructional time spent on vocabulary instruction in the two groups was also examined, resulting in a qualitative inquiry component. The research questions and hypotheses were:

Research Question 1: What is the difference in student reading growth based on vocabulary instructional programs (morphemic analysis or definitional vocabulary) as measured by the RIT scale scores of the MAP assessment?

Null hypothesis 1: There is no difference in reading score growth, as measured by the RIT scale scores of the MAP assessment, between morphemic analysis and definitional vocabulary programs.

Hypothesis 1: Students instructed using the morphemic analysis vocabulary program have higher reading score growth, as measured by the fall and spring RIT scale scores of the MAP assessments, than those instructed using the definitional vocabulary program.

Research Question 2: How is time spent on vocabulary instruction in each class?

Participants

To investigate the first research question, the sample was drawn from two populations: those instructed using morphemic analysis and those instructed in definitional vocabulary instruction programs. Both groups were located in suburban communities in Ohio and were in districts that are classified as type six, meaning the districts are suburban with very low student poverty and high student population.

The morphemic instruction group, which is the target group, was comprised of 51 fifth grade students in a public school located in a suburban city in the Midwest. The district has a median income of \$47, 828. The percent of economically disadvantaged students was 13% and the district had 10% of overall student population classified as minorities (Ohio Department of Education, 2013). The district had 7,259 students enrolled (Ohio Department of Education, 2014). Specifics of demographic enrollment for the district, building and study participants are located in Table 1.

Table 1

Morphemic instruction district, building, and study participant demographic information.

Student Classification	District	Building	Study Participants
All students	7,259	555	51
Am. Indian/Alaskan Native	13 (0.2%)	NC	0
Asian or Pacific Islander	475 (6.5%)	33 (5.9%)	4 (7.8%)
Black, Non-Hispanic	250 (3.5%)	19 (3.5%)	4 (7.8%)
Hispanic	177 (2.4%)	NC	1 (1.9%)
Multiracial	246 (3.4%)	17 (30%)	1 (1.9%)
White, Non-Hispanic	6,097 (84%)	480 (86.3%)	41 (80.4%)
Students with Disabilities	1,039 (14.3%)	73 (13.1%)	11 (21.6%)
Economic Disadvantage	1,043 (14.4%)	23 (4.2%)	0
Limited English Proficiency	266 (3.7%)	17 (3.1%)	0
Migrant	NC	NC	0

Note. NC = Not calculated because there are fewer than 10 individuals in the group. (Ohio Department of Education, 2014)

Eleven students in the morphemic instruction group were classified with disabilities. Three students, 5.9%, received pull-out special education services for reading instruction. Eight students, 15.7%, received inclusion special education services for reading, writing, and/or behavioral instruction. Two of the inclusion students were identified as being on the autistic spectrum; however, the two students experienced no

academic delays as compared to their same aged peers and had no academic goals according to their Individualized Education Plans (IEP). The expectations of the two aforementioned students were not different than students in the regular education environment. Not shown in this table are six students, 11.8%, who received pull-out gifted intervention services, and were identified as superior cognitively gifted.

The definitional instruction group included three classrooms located in a suburban city in the Midwest. The district had a median income of \$52,998. The district had 15% of students classified as economically disadvantaged and 18% of students were classified as minorities (Ohio Department of Education, 2013). The district had 15,947 students enrolled (Ohio Department of Education, 2014). Specifics of demographic enrollment for the district, building and study participants are located in Table 2.

Table 2

Definition vocabulary instruction district, building, and study participant demographic information.

Student Classification	District	Building	Study Participants
All students	15,947	582	116
Am. Indian/Alaskan	20 (0.1%)	NC	0
Native			
Asian or Pacific Islander	969 (6.1%)	16 (2.7%)	3 (2.6%)
Black, Non-Hispanic	1,616 (10.1%)	25 (4.3%)	4 (3.4%)
Hispanic	886 (5.6%)	NC	5 (4.3%)
Multiracial	722 (4.5%)	24 (4.2%)	6 (5.2%)
White, Non-Hispanic	11,734 (73.6%)	507 (87.1%)	98 (84.48%)
Students with Disabilities	1,700 (10.7%)	76 (13.1%)	11 (9.5%)
Economic Disadvantage	3,142 (19.7%)	99 (17.0%)	0
Limited English Proficiency	1,169 (7.3%)	11 (1.9%)	0
Migrant	NC	NC	0

Note. NC = Not calculated because there are fewer than 10 individuals in the group. (Ohio Department of Education, 2014)

Not shown in this table are nine students (7.8%) identified as mathematically gifted. The definitional vocabulary instruction district did not serve gifted students in reading.

The two schools chosen for definitional instruction and morphemic instruction are comparable in multiple areas, including socio-economic status and state standardized assessment achievement levels; however, the morphemic analysis instruction group, the target group, has twice the number of students with disabilities as the definitional instruction group, the comparison group. The schools were chosen based on these similarities for achievement comparison purposes.

Procedures

The morphemic analysis vocabulary group received vocabulary morphemic analysis instruction using the *Building Vocabulary* program. Additionally, the morphemes were reintroduced and used frequently after introduction to continue working the morpheme into the students' vocabularies. Instruction was a minimum of 15 minutes on introductory lesson days, and a minimum of five minutes on student work exploratory days. The program focused on introducing a new morpheme each week and utilized a multitude of games, experiences, and exposures to the targeted morpheme.

The definitional vocabulary group received vocabulary instruction using a modified version of the definitional vocabulary focused *Rev it Up* vocabulary program. The instruction with this program followed commonly used practices of providing a list of words with their definitions. Words were used within a specific context during the two-week instructional period for the list and were rarely reintroduced or reused as the year progressed. Instruction was sporadic and inconsistent between classrooms and days.

Measurement Instrument

The MAP assessment was developed by the Northwest Evaluation Association in 2000 and is used in more than 7,400 districts and educational agencies in the United States and internationally (NWEA, 2014). The computer-adapted assessment uses the Rasch Unit Scale (RIT scale) to provide measurement of student academic growth and consists of between 47 - 52 questions (Northwest Evaluation Association, 2014). Because the assessment is an adapted assessment, each student may have a different number of test items. The assessment is concluded when students reach a level at which they are getting 50% of the questions correct. Adaptive assessments identify areas of a student's strengths and weaknesses. For this study, the operational definition of reading growth is the student's RIT scale score. The assessment's reliability is consistently in the low to mid 0.90's, resulting in high reliability (NWEA, 2011).

Data Collection

To test the null hypothesis associated with the research question one, the MAP assessment scores for assessments administered between fall 2014 and spring 2015 at both study locations were obtained. Students completed the assessment on district-provided computers as part of the districts' mandated testing battery. Score reports for the definitional instruction group were obtained via the participating teachers and principals, while score reports for the morphemic instruction group were available via the researcher. MAP assessment data were entered into the statistical analysis software SPSS 22.0 and analyzed using a repeated measures 2X2 analysis of variance (ANOVA)

examining differences in pre- and post-test scores of both groups. For the purpose of comparison, the standardized scores of MAP, the RIT scales, were used. The statistical procedure, the repeated measures 2X2 ANOVA, was chosen for the analysis because data were taken at two different times, fall and spring.

In addition, time instructional logs (Appendix A) were maintained by the participating teachers for six weeks beginning in January, 2015 and ending in February, 2015. Electronic logs were provided to participating teachers to complete on their computers and emailed back to the researcher at the completion of the prescribed tracking period. The six-week time span was chosen due to most consistency between school calendars and would provide a glimpse at the type and amount of instruction that was provided to students in each setting. The data in the logs were used to track the amount of time, minutes/day, teachers dedicated to explicit vocabulary instruction. Responses to a follow-up questionnaire were sought to obtain additional insight regarding instruction. The questionnaire was distributed and collected via e-mail with the consent of the three definitional instruction, comparison group, teachers. The five-item questionnaire question is located in Appendix B. Questionnaire responses were analyzed using Marzano's conceptual framework of vocabulary instruction (Marzano, 2009). The researcher analyzed responses to identify amount of exposure opportunities to new words, word play activities, and opportunities for students to discuss and create their own meanings for new words.

Independent Review Board (IRB) approval was received for the research study in November, 2014, prior to this study and implementation.

Summary

Two schools, comparable in socio-economic, achievement levels, and student demographics, were chosen to participate to study the differences in student reading growth based on using the morphemic and definitional vocabulary . One school instructed vocabulary using a definitional-based vocabulary program, the comparison group, while the other school used a morphemic-based vocabulary program, the target group. Data were obtained using the fall 2014 and spring 2015 MAP assessment administrations and were analyzed using a repeated measures 2X2 ANOVA. Follow-up questionnaires were sent via e-mail to participating teachers to determine vocabulary activities and instruction that took place within participating classrooms, in order to study research question two. Questionnaire responses were analyzed using Marzano's (2009) conceptual framework of vocabulary instruction for research question 2. Responses were used to provide additional insight into vocabulary instruction provided during the study, as well as participating teachers' philosophy of vocabulary instruction.

IV. RESULTS

The purpose of this study was to study the differences in students' reading score growth between morphemic vocabulary instruction and definitional vocabulary instruction, as measured by the MAP assessment. Additionally, the study examined the amount and content of vocabulary instruction through instructional time logs and a follow-up questionnaire. Current research has not clearly identified the most effective method or methods of vocabulary instruction. The analysis of data will provide further insight into the effectiveness of two particular forms of vocabulary instruction, morphemic and definitional. Data collected are described and analyzed within this chapter. Statistical results of the study are included.

Data Analysis

MAP Assessment Data

Research Question 1: What is the difference in student reading score growth based on vocabulary instructional programs (morphemic analysis or definitional vocabulary) as measured by the RIT scale scores of the MAP assessment?

Null hypothesis 1: There is no difference in reading score growth, as measured by the RIT scale scores of the MAP assessment, between morphemic analysis and definitional vocabulary programs.

Hypothesis 1: Students instructed using the morphemic analysis vocabulary program have higher reading score growth, as measured by the fall and spring RIT scale scores of the MAP assessments, than those instructed using the definitional vocabulary program.

Research Question 2: How is time spent on vocabulary instruction in each class?

MAP assessment data were collected from the Fall, 2014 and Spring 2015 or both the target and comparison groups. The definitional instruction group, comparison group, tested 115 students in the fall with a mean RIT score of 210.52 (SD = 13.3) and 112 students in the spring with a mean RIT score of 219.19 (SD = 13.5). The morphemic instructional group, target group, tested 51 students in the fall with a mean RIT of 214.67 (SD = 11.1) and the same 51 students in the spring with a mean RIT score of 221.27 (SD = 8.6) Summaries of MAP data are available in Table 3.

Table 3

Summary of MAP Assessment Data

	Definitional Instruction		Morphemic Instruction	
	Fall 2014	Spring 2015	Fall 2014	Spring 2015
Students Tested	115	112	51	51
Range	171-236	166-255	187-235	203-240
Median RIT	212	222	216	220
Mean RIT	210.52	219.19	214.67	221.27
Standard Deviation	13.3	13.5	11.1	8.6
Skewness	-0.59	-1.04	-0.57	0.05
Kurtosis	0.29	2.59	0.010	-0.77

Note. *Represents overall student performance.

Student performance is reported in five levels: low, low average, average, high average, and high. In the fall 2014 assessment, 19 definitional instruction, comparison group, students, 17%, performed in the average range, while 20 students, 18%, were reported as average in the spring 2015 assessment. Ten students, 20%, in the morphemic instruction, target group, students performed in the average range on the fall 2014 assessment, and 13 students, 26%, performed in the average range on the spring 2015 assessment. Complete overall student performance is displayed in Figure 1.

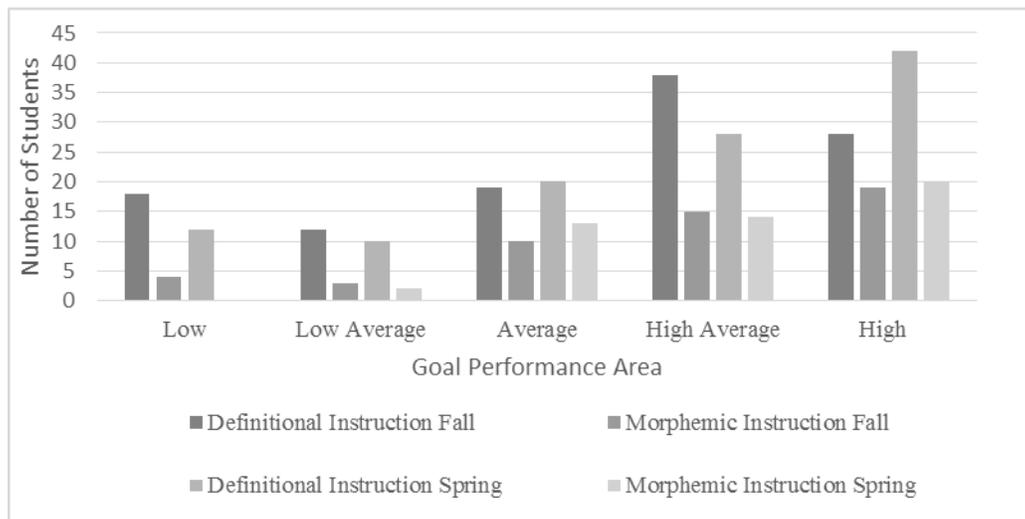


Figure 1: Overall Student Performance

Specific statistical assumptions, including sample size, distribution of data, and equal variances, were considered before performing analysis of the data. The assumption of sample size has been met, as there were 51 students in the morphemic instruction (target group) sample and 112 students in the definitional instruction (comparison group)

sample. The data were slightly skewed for both definitional and morphemic instructional groups. Definitional instruction is more skewed, skewness = 0.68, kurtosis = 0.27; morphemic instruction is less skewed, skewness = -0.467, kurtosis = 0.274. Both were in the acceptable range to proceed with the analysis (Vogt & Johnson, 2011). Variances are not equal within the data sets; standard deviation for definitional instruction in the fall was 13.07 and 13.33 in the spring, while morphemic instruction was 11.12 in the fall and 9.14 in the spring. However, Levene's test of equality of error variances indicated that the statistical assumption of variances was in range ($p = 0.22$) to continue with the analysis (Warner, 2013).

To assess the difference in students' reading score growth between the two types of vocabulary instruction for improving reading achievement, a repeated measures 2x2 ANOVA was used. There were two factors, time (fall vs. spring administrations), and group (definitional vs. morphemic). Before the analysis, four students' scores were excluded because only fall scores available. One student's score was excluded because there was only a spring score. The main effect of time was found significant, $F = 26.79$ ($p < 0.001$) as well as the main effect of group, $F = 4.46$ ($p < 0.036$). The interaction effect of group X time was not found significant, $F = 0.487$ ($p < 0.486$). Additional results are available in Table 4.

Table 4

Results of 2X2 ANOVA

Source	<i>Df</i>	Mean Square	<i>F</i>	<i>p</i> -value	Observed Power
Main Effects					
Group	1	678.31	4.456	0.036	0.557
Time	1	4076.456	26.788	0.000	0.999
Interaction Effect					
Group and Time	1	74.060	0.487	0.486	0.107

The null hypothesis that there was no difference in student reading score growth, as measured by the MAP assessment, between morphemic and definitional instruction groups can be rejected because there was a significant difference in RIT scale scores between definitional and morphemic instructional groups. There was also a significant difference in scores from the fall 2014 to the spring 2015 administration of the MAP assessment for both groups. The morphemic instruction group (target group) performed better as indicated by the higher mean scores. Overall, students performed better on the spring 2015 administration than on the fall 2014 administration. As indicated in the results of the interaction effect (not significant), the patterns of MAP score growth for both groups were positive (Figure 2).

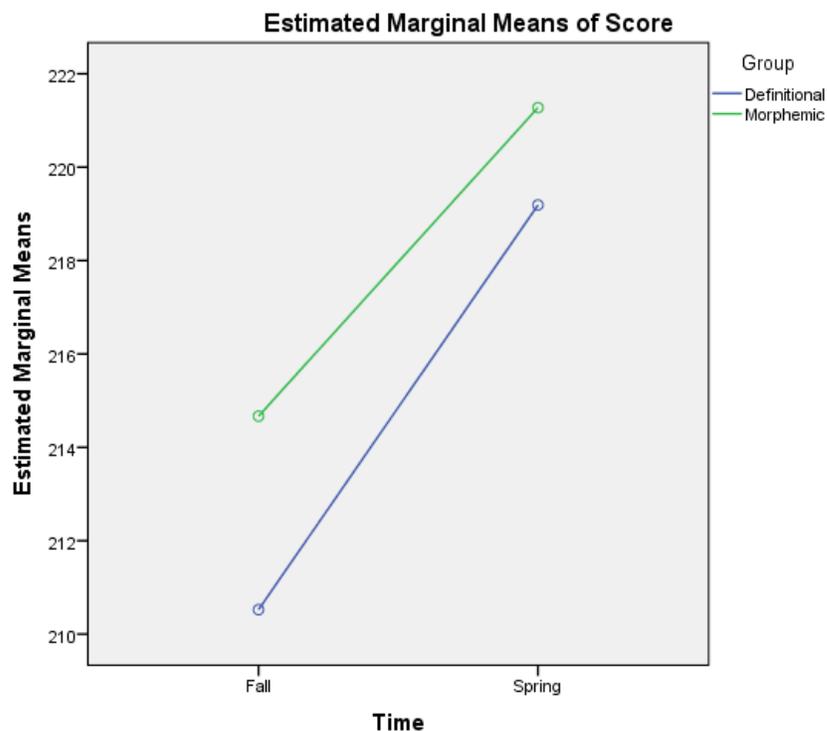


Figure 2: Student Reading Score Growth

Instructional Time Logs and Questionnaire

Research Question 2: How is time spent on vocabulary instruction in each class?

Instructional time logs were maintained by four participating teachers to record the number of minutes per day of explicit vocabulary instruction. Five classrooms, two classes in morphemic group, and three classes in definitional group, were monitored. Twenty-eight instructional days were included in the study, beginning January 5, 2015 and ending February 27, 2015. Range of instruction time was similar between all teachers, with two definitional teachers and the morphemic teacher reported 0 – 15 minutes per day. The mode of instructional time for definitional teachers was zero

minutes, while the morphemic mode was 10 minutes. Time for definitional instruction had varied medians with two classes having a median of five minutes and one class had a median of zero, the morphemic median was 10 minutes. The means of instructional time for definitional teachers differed between classrooms with an average 5.18, 4.82, and 6.25 minutes per day. Time for the morphemic teacher averaged 8.93 minutes per day of vocabulary instruction. Overall, morphemic instruction students received more vocabulary instruction than definitional instruction students. Total minutes spent on instruction, as well as average minutes per day, are in Table 5.

Table 5

Instructional Time Log in Minutes

	Definitional Instruction			Morphemic Instruction	
	A	B	C	D	E
Days of instruction	14	12	14	24	24
Range	0-15	0-15	0-20	0-15	0-15
Mode	0	0	0	10	10
Median	5	0	5	10	10
Mean	5.18	4.82	6.25	8.93	8.93
Total	145	135	175	250	250

Note. All times are reported in minutes, unless otherwise noted. Classes A, B, and C received definitional instruction. Classes D and E received morphemic instruction.

A follow-up questionnaire was administered to participating teachers to generate additional information regarding instruction occurring within the classroom. Four total

teachers responded to the questions: one morphemic instruction teacher, classes D and E, and three definitional instruction teachers, classes A, B, and C. Definitional instruction group teachers (n = 3) completed the questionnaire together. Marzano's concept of vocabulary instruction and acquisition was used to analyze questionnaire responses, specifically looking for the following elements: opportunities for students to form their own definitions of words, engage in multiple activities to construct a picture, graphic, or symbol to represent words, activities to incorporate multiple exposures to work new words into long term vocabulary, opportunities for student discussion of new words, and opportunities for games to allow students to play with new and old vocabulary.

Teachers in both groups' philosophy of vocabulary instruction included a belief that vocabulary instruction, and the importance of studying words, should be stressed more within the classroom; however, teachers acknowledge that vocabulary instruction can often get lost in the shuffle of instructional decisions. All teachers expressed an enjoyment in learning new words and an attempt at sharing that interest with their students.

Students in both instructional groups, target and comparison, had the opportunity to engage in a variety of activities when being introduced to vocabulary, as well as discuss vocabulary throughout the instructional cycle. Definitional instruction group teachers instructed vocabulary two days a week, typically Tuesdays and Thursdays, with a variety of activities each day. Activities and words were derived from the district adopted *Rev it Up* program, although the program had been modified to fit the teachers'

current teaching schedule. Students were provided a list of 8 – 10 words that were studied on a bi-weekly basis. Day one of the two-week cycle involved introducing the words and reading a story from the basal program that used the words in context. The story was discussed afterward. Day two involved an activity with the students to discuss the words or to explore the semantics of the word (i.e., prefixes/suffixes, parts of speech, definitions, etc.). Day three involved reading the words in context in a different story, with discussion of the words incorporated into the reading discussion. Individual homework was usually assigned on this day to be due later in the week. Homework was typically a worksheet or an assignment to create sentences using the vocabulary words. A rapid review of the words was used on day four, along with a quiz over the assigned words.

The morphemic instruction teacher used the district adopted *Building Vocabulary* program. Vocabulary instruction occurred four days a week, with a fifth day used as a student individual reflection and/or assessment day. Day one involved student discussion and introduction of the morpheme to be studied for the week. Students were guided through breaking down a list of words that all included the targeted morpheme. Previously studied morphemes were also analyzed and broken down to continue to expose students to these word parts. Day two involved exploring the meaning or usage of words that included the morpheme, these words may not have been included in the previous day's discussion and activity. Day three incorporated riddles or word scrambles for class discussion of the words. Homework was assigned on Day three which usually

included a short reading passage and comprehension questions incorporating the morpheme, as well as reading skills. Students worked individually or in pairs on day four to apply their knowledge of the morpheme in new situations through games. Day five was an individual assessment day of the students, either through the use of crosswords, reflection, or an identification activity.

Teachers in both groups described a variety of activities, using a variety of learning styles, to assist students with learning words. Activities used in both groups included acting out words, responding to reading comprehension questions, and quizzes. The definitional instruction group teachers used more teacher directed discussion and activities throughout their word study. The morphemic instruction teacher utilized more riddles and games to provide small group and paired opportunities for students.

There were multiple opportunities for discussion of vocabulary provided in both groups. Definitional instruction group teachers provided discussion when words were initially introduced, as well as when encountered in context in reading, including providing additional examples, celebrating words found in reading, and incorporating the words in regular discussion throughout the instructional day. Most discussion was in response to teacher directed discussion. The morphemic instruction teacher provided discussion to break down the meaning of the word based on morphemes during the initial introductory day of the root of the week. Morphemes are also discussed when words are encountered in reading, as well as with the prescribed program. Activities throughout the

week encouraged students to discuss the words, and their usage, with a small group or partner before sharing and discussing as a whole class.

The use of games was rarely incorporated into the definitional instruction group's vocabulary instruction, on the other hand, the morphemic instruction teacher used games each week to provide alternative ways to play with words, as well as to build additional meanings and uses of the morpheme. Definitional instruction group teachers primarily used reading and discussion to model contextual analysis word decoding skills.

Students were encouraged to determine the meanings of words on their own in both groups. Context analysis strategies were modeled and instructed by all teachers in whole class reading. These strategies were reinforced in vocabulary study each week. Students in both groups maintained a list of words that have been learned and discussed to reference throughout the year, to aid in decoding in independent practice.

Summary

Using the results from the 2X2 ANOVA , there were significant main effects of time and group; however, there was no significant main effect with the interaction of time and group. Analyzing instructional time log data, definitional vocabulary instruction teachers taught vocabulary for an average of 13.3 out of 28 days and an average of 5.18 minutes per day. The morphemic instruction teacher taught vocabulary for an average of 24 out of 28 days and an average of 8.93 minutes per day. Using Marzano's framework of vocabulary instruction, students in both groups were offered multiple opportunities to discuss and discover new words in a variety of ways including games and discussion.

Teachers also used contextual analysis strategies and maintained a list of words learned and discussed.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this research study was to determine which vocabulary instructional method, definitional or morphemic, is more effective in reading score growth as measured by the Measures of Academic Progress (MAP) assessment. It also intended to discover the amount of instructional time spent on vocabulary instruction in all studied classrooms. A summary and discussion of results, as well as recommendations for future research are explored within this chapter.

Conclusions

Analyses from this study found both instructional groups, definitional and morphemic, improved student performance on the MAP assessment as measured from fall 2014 to spring 2015, confirming prevailing literature that students will achieve more with intentional vocabulary instruction than on their own (Apthorp, 2006; Boulware-Gooden, Carreker, Thornhill, & Joshi, 2007; Butler, 2007; Elleman et al., 2009; Kelley, Lesaux, Kieffer, & Faller, 2010). However, when examining the data, definitional-instruction showed more growth over the study time parameters with a larger increase in their average mean Rasch Unit (RIT) score, while the group that used morphemic instruction, showed higher overall mean RIT scores. This is a similar finding to Baumann et al. (2003), where students were divided into three instruction methods: contextual analysis, definitional, and morphemic analysis. Pre- and post-tests were administered to fifth grade students to determine growth in a battery of literacy and vocabulary assessments. Students receiving definitional instruction attained higher

standardized test scores on textbook vocabulary tests, but all groups of students, contextual analysis, morphemic analysis, and definitional instruction, showed overall comprehension growth.

Morphemic instruction students received more direct vocabulary instruction, on average, than definitional instruction students. Teachers in both groups, definitional and morphemic, reported incorporating a variety of instructional activities not limited to the initially reported method of vocabulary instruction. This included definitional teachers breaking down words, the morphemic teacher introducing definitions, and both groups integrating contextual analysis activities in vocabulary and reading instruction.

Discussion

The findings of this study are consistent with the difficulty of determining effectiveness of particular forms of vocabulary instruction due to the intricacies of the reading process, the instructional process, and current testing measures (Elleman et al., 2009). Each of these individual processes can produce unknown, unpredicted, and unexplainable variables into a study.

One of these variables, as also seen in Apthorp (2006), is the unknown factor of previous word knowledge. In the current study, morphemic-instructed students were exposed to the morphemic analysis program for one academic year by the previous academic year's teachers. The morphemic group displayed overall higher RIT scores in the fall and in the spring, which may be a reflection of previous word knowledge including the ability to breakdown and decode words.

When examining the results of the current study it is important to note, that the morphemic group was comprised of twice the amount of students with disabilities. These students experienced academic and behavioral delays that may affect testing results; especially as the MAP assessment was given with no common testing accommodations, such as questions read aloud or small group administration. While these students may have shown growth, they still may not score high enough to reflect in a higher overall mean of the morphemic group's RIT scores. Additionally, students in the morphemic group recorded a higher overall mean score in the fall, therefore decreasing the overall opportunity for growth as a whole group, thus potentially experiencing a ceiling effect. Lastly, students in the morphemic group took the MAP assessment less than 1 week after completing the last round of state-mandated testing, resulting in potential test fatigue and anxiety regarding computer-based assessments. Students in the definitional group had three weeks between state testing and their final MAP assessment. State testing for both groups of students was a combined 10 days of computer-based assessments in Language Arts, Math and Science.

Vocabulary instruction is just one important component of a comprehensive reading program (National Reading Panel, 2000). Teachers in both groups, definitional and morphemic, incorporated techniques, activities, and methods into their regular reading instruction that may have helped encourage and spur growth in reading achievement. These methods were not directly studied and could have had an impact on the overall growth of students within the study.

Limitations

While this study presented several significant findings, there were limitations to the study. First, the study was limited to five classrooms in two suburban Midwestern schools and are not generalizable to other settings. Second, school was cancelled five more days for the morphemic students than the definitional students due to snow. The weather, combined with new state-mandated testing, resulted in the collection of less instructional data and loss of instructional time. Third, the instructional data do not mirror the entire test window due to each district adjusting their testing calendars to accommodate lost instructional time due to testing and weather. Students in the morphemic group missed four days due to weather during the instructional log window, and nine days for the entire academic year were lost due to weather. Definitional students lost two days during the instructional log window and four days overall due to weather. Lastly, the study did not control, or attempt to control, other forms of literacy instruction during the study's time parameters. Teachers participating in the study were able to continue with district-approved and/or self-selected literacy curriculum not accounted for in the study. Other components of the literacy program (i.e., comprehension strategies, interventions, enrichment activities, spelling programs, writing instruction, etc.) were not studied or investigated as part of this study. Student achievement growth rates were not considered. When the study began, the morphemic target group recorded higher scores in the fall than the definitional comparison group. These higher initial scores may have an impact on the ability to show the same amount of

growth as students that record lower initial scores. The study also did not control for the following variables that may impact student performance on standardized tests and reading performance: test anxiety, traumatic events, testing irregularities, parent/home support, teaching style, and student literacy/reading preferences.

Future Research

Future research should focus on determining which vocabulary instructional strategies work best for struggling readers or students with disabilities and which work best for proficient readers or advanced learners (Apthorp, 2006). Limited research is available that is focused on struggling readers, as other research studies used mixed ability populations (Abbot & Berninger, 1999). Many researchers revealed that struggling readers made significant gains, while those who were proficient or advanced readers made no or very little gains with direct instruction. The current study did not focus on subgroup populations and does not address this research need. Understanding which strategies, methods, or materials work best to assist all learners will aid teachers and administrators in making sound and responsible educational decisions. Further research will need to be conducted to fully analyze and understand the implications of programs, strategies, and methods.

Lastly, existing studies emphasized the need for using strategies or programs with fidelity. Few studies measured or accounted for implementation fidelity of the methods or programs being studied, and only one study in the review accounted for various levels of implementation and use in the classroom and the impact on achievement. The current

study revealed that the definitional teachers did not implement or instruct a single program with fidelity, while the morphemic teacher did implement the program as intended. In the field, teacher leaders and administrators assist in steering and ensuring program fidelity. In a study or experimental environment, the researcher has additional influence on the ability to effectively implement the changes to instruction. Additional research should be conducted to determine the effectiveness of instruction in correlation to program implementation fidelity to help steer educational decision making.

Recommendations

Although the results of this study did not definitively confirm a most effective vocabulary method, the study did reaffirm that incorporating vocabulary instruction into literacy programs is an important contributing factor to student success in reading and other academic content areas (Cunningham & Stanovich, 1997; Nagy, 2007; Paren & Bisanz, 2007). Teachers should work to include a variety of activities, methods, techniques, and opportunities for discussion for students to learn, explore, and begin to develop ownership of vocabulary and vocabulary decoding strategies. Research conducted within this study, as well as cited within the literature review, supports offering multiple exposures to words, techniques, and strategies over extended periods of time for continuous support and reinforcement of student learning (Abbott & Berninger, 1999; Baumann et al., 2002; Baumann et al., 2003; Boulware-Gooden et al., 2007; Buddingh, 2005; Butler, 2007; Curtis, 2008; Jenkins et al., 2014; Kieffer & Lesaux, 2007; Nash & Snowling, 2006; Rasinski et al., 2011).

Professional development opportunities should be provided for literacy teachers, as well as other content area specialists, to incorporate word-learning strategies in their instruction for aiding student comprehension and understanding. This professional development should encompass the three methods of instruction discussed within this study: definitional, morphemic, and contextual analysis. The combined knowledge and awareness of multiple word learning strategies may assist in student understanding, as well as further transfer of skills to independent and authentic tasks. Educational leaders and curriculum planners should work at staying abreast of research-based strategies and methods that will reinforce vocabulary instruction in the reading classroom and other academic learning areas as well as offer continued support for programs and strategies already implemented within their districts and classrooms.

Summary

The purpose of this study was to compare the effects of two vocabulary instructional approaches on reading score growth.. This study focused on five classrooms, with three classrooms teaching definitional strategies and two classrooms teaching morphemic strategies. The data obtained from the MAP assessment were analyzed to determine the growth in RIT scale scores from fall 2014 to spring 2015. Data analyses concluded there were significant effects in achievement from fall to spring as well as achievement between the definitional and morphemic groups. Future research should be conducted to determine the effectiveness of vocabulary instruction on special education populations and the implications of specific methods' implementation fidelity.

Teachers and educational leaders should continue incorporating vocabulary learning strategies into their curriculum and professional development plans to support student achievement and comprehension.

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APPENDIX A

Instructional log data					
Date	Definitional A	Definitional B	Definitional C	Morphemic D	Morphemic E
January 5	0	0	0	15	15
January 6	10	15	20	0 (No School)	0 (No School)
January 7	0	0	0	0 (No School)	0 (No School)
January 8	15	15	10	0 (No School)	0 (No School)
January 9	0	0	0	10	10
January 12	0	0	0	10	10
January 13	10	10	10	10	10
January 14	5	0	0	5	5
January 15	5	5	5	10	10
January 16	0	0	0	0	0
January 20	15	15	20	15	15
January 21	0	0	0	10	10
January 22	15	15	10	10	10
January 23	0	0	0	10	10
January 26	0	0	0	0	0
(No School)					
January 27	5	10	15	15	15
January 28	0	0	0	10	10
January 29	10	5	5	10	10
January 30	0	0	0	10	10
February 2	0	0	10	15	15
February 3	10	15	20	10	10
February 4	0	0	0	10	10
February 5	15	15	15	5	5
February 6	0	0	0	10	10
February 9	0	0	15	15	15
February 10	10	10	0	10	10
February 11	0	0	10	10	10

February 12	10	5	10	5	5
February 13	10	0	0	10	10

Note. All data reported in minutes.

APPENDIX B

Teacher Interview Questions

1. What is your personal philosophy of vocabulary instruction?
2. What types of activities do you use when introducing vocabulary to your students?
3. What opportunities for discussion of vocabulary are offered to your students?
4. Describe opportunities or games that are students are given to further play or use vocabulary after words have been introduced and tested.
5. How do you encourage students to determine meaning of words on their own?