Vocabulary Instruction in the Middle Grades: Moving Past Memorization

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EDU 59003: Applied Research in Education

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February 9, 2023

Abstract

This study's purpose was to evaluate the effectiveness of explicitly teaching students affixes and roots to provide them with the tools to learn new words independently. It was hypothesized that by educating students on word parts, they would be more successful at independent word learning in the future. The researcher also speculated that students would use the word correctly in a sentence as long as they could identify the word's meaning. Two research questions guided this study: (1) What effect does explicit instruction of affixes and roots have on eighth grade students' ability to correctly define new words independently? (2) Does a relationship exist between students' understanding of these new words and their ability to use them correctly in context? Eighty eighth graders participated in this six-week study. These students were divided into a treatment group and a control group. While the control group received the same vocabulary instruction that had been used previously, the treatment group received this instruction and explicit instruction in word parts. After six weeks, the treatment group demonstrated a percentage growth average of 29.54%, higher than the control group's percentage growth average of 17.24%. These findings support the first research question and hypothesis that word part instruction has a positive effect on independent word learning. Regarding the second question and hypothesis, while there was a positive correlation between students' understanding and their ability to use the word correctly, it was not strong enough to suggest that it was always the case.

Keywords: vocabulary, word parts, explicit instruction, independent word learning

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Each and every day, students of all ages use vocabulary constantly to communicate their ideas both in and out of school. However, as students enter upper elementary and middle school, vocabulary becomes especially important because increased expectations cause students to shift from "learning to read" to "reading to learn." In other words, their academic success becomes more dependent on their ability to read and comprehend increasingly complex texts that contain difficult vocabulary. Based on the findings of researchers like Lesaux et al. (2014) as well as numerous other studies, vocabulary has a significant impact on reading comprehension (p. 1180). As a result, vocabulary instruction is essential in the middle grades to equip students with the knowledge and skills necessary to succeed in high school and beyond. All too often though, educators teach vocabulary in a manner that is nothing more than a lesson in memorization. One teacher paints a picture of her own experience as an adolescent:

> The scenario is all too familiar: The instructor hands out a list of 20 words on Monday to be memorized for Friday's quiz. Motivated students retain the words long enough to achieve As and Bs on their tests and then forget almost immediately what they had studied. (Gorlewski & Sovereen, 2013, p. 116)

Unfortunately, this scene is a harsh reality in countless classrooms across the nation and around the world even today. For many teachers, this reality may be due to a variety of reasons, including a lack of vocabulary knowledge themselves or a lack of professional development on effective strategies for vocabulary instruction (Alves et al., 2018; Newton, 2018). Regardless, it is a trend that must be changed in pursuit of what is best for students.

At the school where the study took place, the same vocabulary curriculum had been used with students in Communications classes for over ten years. This past fall, it was communicated

to the school that the disposable vocabulary workbook that the students used each year would no longer be printed. For this reason, a new vocabulary curriculum must be chosen, and teachers must not resort to the method of memorization. This study was conducted to determine whether the explicit instruction of affixes and roots would be an effective strategy to include as a focus for the vocabulary curriculum of the future. It was not a significant element of the vocabulary workbook used with students for the past several years. However, this strategy was chosen for investigation in this study because researchers in another study found that "teaching the meanings of commonly occurring affixes and a strategy for analyzing the meanings of affixed words promoted students' interest in words and provided them tools for independent word learning" (Manyak et al., 2018, p. 299).

The purpose of this study was to evaluate the effectiveness of explicitly teaching students affixes and roots that were commonly used in grade-level texts to build vocabulary and provide the participants with the tools to learn new words independently. If the results of the study showed that explicit instruction of word parts was an effective way to promote independent word learning, it would help to inform the type of vocabulary curriculum that should be selected for use at the school where the study was conducted beginning next year.

In this research study, the questions that guided the project were as follows:

1. What effect does explicit instruction of affixes and roots have on eighth grade students' ability to correctly define new words independently?

2. Does a relationship exist between students' understanding of these new words and their ability to use them correctly in context?

The teacher researcher hypothesized that by educating students on commonly used prefixes, suffixes, and root words as well as the tools for using them, students would be more

successful at independent word learning when they encountered unfamiliar words in the future. In addition, the researcher speculated that after students used their understanding of affixes and roots to identify the meaning of the unfamiliar words, they would be able to use the words correctly in a sentence.

Literature Review

In this literature review, the teacher researcher began by discussing the lack of understanding that many educators have regarding vocabulary and its effective instruction as well as the strong impact that professional development can have on teaching practice. The importance of implementation across content areas at the middle level was then discussed and supported by a deeper analysis of why vocabulary is so essential for widespread academic success. With an understanding of the *why* behind vocabulary instruction, the teacher researcher analyzed *how* this impact was made by sharing an explanation of the common themes among research-proven interventions in the field. Finally, the author focused on one specific strategy for vocabulary instruction that encapsulates all of these research-proven qualities; it was the strategy evaluated in this research, the explicit instruction of affixes and roots to develop independent word learning in students.

Lack of Teacher Education

Despite its proven importance, vocabulary instruction is still lacking in many classrooms today; if it exists, teachers often rely on the method of memorization. In order to understand the reasoning behind this reality, it is useful to gather information from those who conduct the instruction themselves, teachers. According to one study, teachers may understand the importance of vocabulary, but they lack the knowledge of how to teach it in a way that leads to long-term understanding (Alves et al., 2018, p. 350). Educators may also choose not to

implement researched strategies because they do not understand the concepts themselves. For example, the morphological approach to teaching vocabulary, which is evaluated in this study, involves breaking down the roots of words to recognize patterns among other words; many teachers may not feel confident and comfortable with morphological analysis themselves, so they avoid the topic and rely instead on a "teacher-directed" approach to learning words (Newton, 2018, p. 4). Without support, it is not surprising that teachers who have these feelings stick with what they know and likely experienced as a student themselves, the method of memorization.

One possible resolution for this gap in teachers' knowledge is professional development. After analyzing the initial thoughts of teachers, the studies conducted by Alves et al. (2018) as well as Newton (2018) demonstrated the impact of supporting teachers with resources; results of both studies showed that professional development which focused on vocabulary structures and strategies resulted in the implementation of more effective vocabulary practices for students. In other words, when teachers were provided the resources and information needed, they could make the intelligent shift from instruction that allows for procedural learning to strategies that foster conceptual understanding of the content. Other research studies noted that before implementing vocabulary strategies involved in the study, extensive support was provided to teachers before and during implementation (Gallagher & Anderson, 2016; Kelley, Lesaux, Kieffer, & Faller, 2010; Lesaux et al., 2014). Professional development is a crucial part of implementation of effective vocabulary instruction so that teachers can feel confident in the strategies and therefore become more effective educators for their students. Before this research was conducted, the teacher researcher extensively studied the strategy of explicitly teaching word parts so that the instruction could be implemented effectively to the treatment group of students.

Implementation across Content Areas

In the middle grades, it is not just the English teacher's job to teach vocabulary. Vocabulary is present in every subject across the curriculum; it is used in textbooks, discussions, and everything in between. Unfortunately, many teachers of other subjects fail to teach vocabulary effectively; Fisher and Frey (2014) as well as Harper (2018) address this commonality of educators across content areas to assign words as they engage with each new chapter that must be looked up and studied independently before the unit test. To rectify this situation, every teacher in a middle school should receive the professional development that they need to successfully adopt research-based strategies for vocabulary instruction. Explicit instruction of affixes and roots may not be the strategy used by every teacher, but teachers of all subjects can benefit from learning proven approaches to teaching keywords in their subject area. Gillis (2014) summarizes the point well by stating, "Vocabulary is everyone's responsibility" (p. 286). Unified efforts among the faculty to improve students' vocabulary knowledge through proven measures will likely result in greater gains for students than if just one teacher took on the responsibility alone.

Why Teach Vocabulary?

As specified earlier, research has shown that vocabulary has a significant impact on reading comprehension (Kelley et al., 2010, p. 7; Lesaux et al., 2014, p. 1180). When students are able to read and understand more complex texts, they will learn and grow more as a result. According to several researchers, the impact of vocabulary instruction is especially evident for struggling readers (Alves et al., 2018; Ilter, 2019). In addition to gains in reading comprehension, the results of several studies suggest that vocabulary intervention resulted in "significant effects on students' academic vocabulary knowledge, morphological awareness skills, [and] written

language skills" (Lesaux et al., 2014, p. 1184). These effects will be evaluated again using the data collected in this study. All in all, multiple studies within the body of knowledge that was analyzed further support the effectiveness of research-based strategies on increased vocabulary development (Alves et al., 2018; Gorlewski & Sovereen, 2013; Ilter, 2019; Kelley et al., 2010). For this reason, a research-proven strategy was chosen as the intervention to be evaluated within this study.

Characteristics of Effective Instruction

Teaching vocabulary using research-based strategies clearly has many benefits for students, but there are a wide variety of strategies that have been studied. The strategies range from wide reading, context clues, and direct instruction to a morphological approach, mini-lessons, and technology-based interventions. With this variety, it can be difficult for teachers to choose which strategy to implement. Upon analysis of the literature, the teacher researcher noted several common characteristics among the various strategies presented.

Repetition

The first characteristic that was evident across research strategies was repetition. In order for students to retain new vocabulary long-term, they must interact with the words and concepts multiple times before achieving the desired understanding. Research supports the repetition of vocabulary both within a class period and across multiple days; many of these same studies used elements of direct instruction followed by modeling, guided practice, and independent practice to achieve maximum exposure for their students (Alves et al., 2018; Gallagher & Anderson, 2016; Gillis, 2014; Harper, 2018; Ilter, 2019). Vocabulary cannot be taught effectively in a day, and it likely may take more than a week too; teachers must use the knowledge of their students to decide exactly how much repetition is needed.

Variety

Just because students need repeated exposure to vocabulary words for effective instruction does not mean that teachers should use the same activities each day. In fact, doing so would most likely result in losing student interest and motivation in learning. Instead, effective vocabulary instruction should involve both repetition and variety because students need the repetition, but they remain more engaged when working with words in a variety of contexts and activities. In several studies, researchers noted the importance of using variety among methods of grouping and activities (Dobbs & Kearns, 2016; Gorlewski & Sovereen, 2013; Harper, 2018; Kelley et al., 2010; Lesaux et al., 2014). Variation within vocabulary instruction not only boosts student engagement, but it likely helps to impact student learning as well.

Cooperative Learning

In many types of instruction, cooperative learning is used to encourage students to discuss ideas and work together to achieve a greater understanding of the concept. An analysis of the literature proves that effective vocabulary instruction is no different; over half of the analyzed studies utilized cooperative learning as an aspect of instruction (Fisher & Frey, 2014; Gallagher & Anderson, 2016; Gillis, 2014; Gorlewski & Sovereen, 2013; Ilter, 2019; Kelley et al., 2010; Lesaux et al., 2014; Newton, 2018). Even within cooperative learning, variety can also be used. For example, Kelley, Lesaux, Kieffer, and Faller (2010) provided several examples of how this theme can manifest itself in the classroom, including partner discussions, mock interviews using targeted words, whole-class discussions, and pair-shares (p. 10). As demonstrated, many of these characteristics, like variety and cooperative learning, can be combined in a way that results in maximum benefit for students.

Appeal to Different Learning Styles

In education, it is widely known that students do not all learn in the exact same way; they may be auditory, visual, or even bodily-kinesthetic learners. Many research-based vocabulary interventions are strategically designed to incorporate activities that appeal to a variety of learning styles; this practice ensures that the content reaches all learners (Gallagher & Anderson, 2016; Gillis, 2014; Gorlewski & Sovereen, 2013; Harper, 2018). To begin, teachers may incorporate small-group discussions, which would benefit auditory learners the most. Later, they could incorporate other strategies like the Word Family Grouping activity, which involves physical movement and the use of slashes to visually separate given words into parts (Manyak, Baumann, & Manyak, 2018, p. 298). By appealing to a variety of learning styles, teachers give students the opportunity to engage in the vocabulary content through the mode in which they feel most comfortable and confident.

Use of Writing

The final characteristic observed throughout many of the strategies studied was the use of writing in vocabulary instruction. According to one source, "The writing process is a powerful vehicle for vocabulary development" (Kelley et al., 2010, p. 11). The relationship between vocabulary and writing is so strong because in order for students to use vocabulary words in their own writing, they must possess a deep understanding of the word and be able to apply it to the correct context. An analysis revealed that the use of writing within strategies ranged from crafting single sentences with vocabulary words to integrating them in a short persuasive essay (Dobbs & Kearns, 2016; Gallagher & Anderson, 2016; Gorlewski & Sovereen, 2013; Harper, 2018; Kelley et al., 2010; Lesaux, 2014). Regardless of the way in which it is incorporated, the use of writing within vocabulary instruction challenges student thinking by asking them to

create, which is the highest level of Bloom's Taxonomy; thinking about content in this way can only deepen students' understanding of the vocabulary concepts being taught.

Morphological Analysis

One approach to teaching vocabulary that can combine all of the common themes of effective instruction described above is morphological analysis. This approach is the one that was used in the research described below. As stated in multiple studies, morphological instruction involves the explicit teaching of affixes and roots, and through this approach, students learn to break down words into smaller parts to determine what they mean (Elleman et al., 2019; Goodwin & Perkins, 2015; Manyak et al., 2018). Upon evaluation of the literature, it is clear that this approach brings the characteristics of best practice for vocabulary instruction together when implemented effectively, and it also teaches students valuable tools that they can use for years to come. For this reason, consistent and explicit instruction in affixes and roots "should be ongoing across the middle school years" (Elleman et al., 2019, p. 486). This strategy was chosen for use and evaluation in this study because of the benefits that it has been found to provide to students when teachers engage in effective implementation of the approach.

Effective Implementation

As with most methods of instruction, research-based strategies are more beneficial to students when they are executed effectively in the classroom setting. To accomplish this task, teachers should design daily lessons and activities to incorporate all of the elements of best practice described for vocabulary instruction above, including repetition, variety, cooperative learning, appeal to different learning styles, and use of writing. One study expands on this idea, suggesting that teachers try to "balance explicit instruction and highly participatory activities, foster student engagement, prompt students to engage in metalinguistic talk, and provide ongoing

review of taught meanings and strategies" (Manyak, Baumann, & Manyak, 2018, p. 291). For example, after explicitly teaching a targeted group of affixes and roots, teachers may prompt students to discuss the meaning of unknown words in a small group one day and then engage them in a brainstorm and breaking down of words they can create with the targeted word parts in the next class period. When designing instruction, it is essential that educators "emphasize knowledge (i.e., knowledge of the meaning of roots and affixes) and awareness (i.e., the understanding of how to connect morphemes within the word to create meaning) to best support problem solving" (Pacheco & Goodwin, 2013, p. 548). While there are many positive effects that can be obtained from morphological instruction, they can only be experienced by students if teachers implement the approach correctly.

Benefits

Research has shown that morphological instruction offers unique benefits to students. After all, "beginning in third grade, approximately 60% of words that students encounter in texts are constructed of derivational morphemes (affixes and roots)" (Nagy & Anderson, 1984, as cited in Manyak, Baumann, & Manyak, 2018, p. 290). By learning the word parts that make up over half of the words they will read in grade-level texts, students are better equipped to not only understand the words themselves, but also the passage as a whole. In other words, morphological instruction can improve both word recognition and comprehension. Multiple studies have found that word part instruction produces positive outcomes in students (Elleman et al., 2019; Goodwin & Perkins, 2015; Manyak, Baumann, & Manyak, 2018). Using explicit instruction combined with ample practice, students are not just memorizing individual words one at a time as in the past through the method of memorization. Instead, "students can use morphological knowledge to problem solve an average of three additional words for each new word learned" (Nagy &

Anderson, 1984, as cited in Pacheco & Goodwin, 2013, p. 542). Therefore, not only is the strategy proven to be effective, but it is efficient as well.

Independent Word Learning

Another one of the major positive outcomes found in studies involving morphological analysis is an increase in students' ability to define new words on their own; this process is known as independent word learning. The results of several studies suggest that students can improve their ability to learn new words on their own as a result of intentional instruction in morphology (Pacheco & Goodwin, 2013; Elleman et al., 2019). However, this skill does not develop automatically, and explicit instruction in the affixes and roots alone is not enough. Teachers must provide students with ample opportunity to attempt to define unknown words with support first before they move to defining words independently. One article reiterates this point, stating that, "Frequent guided practice" is needed (Pacheco & Goodwin, 2013, p. 549). Over time, the development of this valuable skill will benefit students not only in middle school but through high school and beyond.

Connections with Writing

While the use of writing has been identified as a consistent characteristic of effective vocabulary instruction, very few studies discussed the specific connection between morphological analysis and writing. However, in one article, Elleman et al. (2019) stated that "writing typically requires more depth of processing than other passive activities such as matching vocabulary words with their definitions" (p. 487). In other words, students require better understanding of words in order to use them correctly in the context of a sentence, paragraph, or essay. Additionally, the data from one study that specifically analyzed how morphological instruction impacted writing showed that there was a positive impact on students'

use of academic words in their writing after instruction in affixes and roots (Wood &

Schatschneider, 2022, p. 417). More research is needed to determine whether this relationship

exists consistently across multiple studies.

Summary

In today's society, many educators still teach vocabulary by relying on the method of

memorization, but this approach does not result in the long-term understanding of concepts for

students. This trend stands in contrast to research that documents the important role of a strong

vocabulary in academic success during the middle grades and beyond. As a result, teachers

would benefit from professional development that provides them with practice using strategies of

more effective vocabulary instruction. One strategy in particular that has been proven to

positively impact students is morphological analysis. By explicitly teaching students affixes and

roots and pairing that instruction with ample opportunity to practice with support, students can

improve their vocabulary, increase comprehension, and eventually engage in independent word

learning. The method of memorization must go, and morphological analysis, when taught using

the characteristics of effective vocabulary instruction, is a viable option to replace it.

Method

This study consisted of a quantitative research approach, designed to determine the effectiveness of teaching affixes and roots to eighth grade students. The six-week study took place in February and March of 2023, and there was a control group and a treatment group among the students. Of the four sections of eighth grade Communications at the school where the study took place, two classes were part of the control group while the other two sections made up the treatment group. The control group received the same type of vocabulary instruction that they had previously during the school year in which they studied and worked with ten targeted words each week out of a workbook purchased by the school district. The treatment group received the same, weekly instruction from the workbook, but it was supplemented with the explicit instruction of affixes and roots that were found both in the targeted words for the week and in grade-level texts. Participants then learned how to apply their knowledge of those word part meanings to unknown words they encountered in texts. To determine the effectiveness of the strategy, all students participated in a pre-test before the study began and a post-test after the intervention. The information below outlines the setting, participants, data sources, research materials, and data collection procedures.

Setting and Participants

The study took place in an eighth grade Communications classroom at a public school in southern Illinois. In Communications, students studied elements of writing, vocabulary, and grammar. The school was located in a small village, which was home to about 1,600 residents, and the junior high building where the study was conducted housed the seventh and eighth grades within the district. According to the Illinois Report Card, 161 students were educated there between the two grade levels, with 98.1% of them being White and only a small percentage

being identified as low-income students (Illinois State Board of Education, 2016). At the school, the day was divided into nine class periods. Students attended Communications class everyday during one of those nine periods for 45 minutes each day. Ten to twenty minutes of each class period was typically dedicated to the study of vocabulary. Data from the 2022 IAR testing showed that 70.7% of the student body demonstrated proficiency in English Language Arts (Illinois State Board of Education, 2016).

The participants in the study included all students from four sections of eighth grade Communications classes at the school where the research was conducted. The sample consisted of 80 total students, including 44 girls and 36 boys, ranging in age from 13 to 14 years old. Among the 80 students, there were 10 students who had IEPs or were receiving RTI services. The participants' reading and writing abilities varied widely, as was evidenced from the progress monitoring regularly conducted in the district. While all students in the four sections of the class participated in the study, those four classes were divided into a control group and a treatment group. The control group consisted of the students in the first and seventh hours, which included 39 eighth graders, while the treatment group was made up of the children in the second and eighth hours, which totaled 41 students. These class periods were assigned to their specific groups to keep the sample size of each group as close as possible, and the placement evenly dispersed the number of students receiving services as well.

Data Sources and Research Materials

Throughout the study, the teacher researcher used two main instruments to collect data. These instruments included the following items:

Pre-Test

A pre-test was used that was created by the teacher researcher (see Appendix A). This pre-test was completed by all students in both the control and the treatment group before the study began. The pre-test was designed to determine students' prior knowledge of affixes and roots as well as their ability to learn new words independently without any instruction. It consisted of a matching section for word parts and a section that challenged students to define words within the context of a sentence and using the word itself. The students were able to choose whether they completed the assessment on Google Forms or on paper. It included many of the affixes and roots that were to be taught throughout the study.

Post-Test

A post-test was also used that was created by the teacher researcher (see Appendix A). It was the exact same assessment as the pre-test given at the beginning of the study. This post-test was administered on the final day of the sixth week, marking the end of the study. When taking this test, students again had the option to take the test on paper or using Google Forms. The same post-test was given to both groups in the study, the control group and the treatment group. The post-test was designed to assess students' understanding after six weeks of instruction.

Procedures and Data Collection

This study took place over the course of six weeks. The pre-test was given to all students before the study began. Both groups were engaged in the same vocabulary instruction that had been provided all school year using the vocabulary workbook that was designated as the district's curriculum. This vocabulary instruction involved a weekly routine, which was followed for all six weeks. On the first day of each week, the teacher used the workbook to introduce ten new targeted words to students. Using the workbook, the students then engaged in a daily activity on days two through four with the ten targeted words. On day five each week, all groups took a

spelling test over the ten targeted words from the workbook. While each week involved a different set of targeted words, this same routine was completed weekly by all students in both the treatment and the control group for all six weeks of the study.

For the duration of data collection, the control group only received instruction and practice with those ten targeted words from the workbook. However, each week, the treatment group engaged in a few ten-minute, supplemental activities that involved the explicit teaching of the targeted word parts and practice using the affixes to learn new, unknown words in sentences and alone. Because the workbook lessons from each of the six weeks included targeted words that all related to a certain root word, the extension activities provided to the treatment group were able to be easily integrated into the existing vocabulary curriculum. At the conclusion of the six-week study, the post-test was administered to all students in both groups. See the Data Collection Timeline in Appendix B for details on which word parts were targeted with the treatment group each week throughout the study. Upon conclusion of the sixth week, the teacher researcher condensed and analyzed the results of the data to determine the effectiveness of the strategy.

Data Analysis and Results

The data collected from the study was analyzed quantitatively using descriptive statistics through Microsoft Excel. Data included results from the pre-test taken before the six-week study began and the post-test administered after the study had been completed. These two tests were identical to allow seamless comparisons to be made between the assessment results. The sample size of 80 students was split into two groups. The first and seventh hour classes, composed of 39 total students, made up the control group, while the second and eighth hour class periods, which totaled 41 students, were designated as the treatment group. These groups were created in an effort to keep the sample size for each of the two groups as close as possible while also evenly distributing the number of students receiving services.

Data Analysis

All participants had the option to take both the pre-test and post-test on paper or using Google Forms. Pre-tests were taken during week one of the data collection while post-tests were administered at the end of the sixth week. Upon completion of these assessments, the teacher researcher graded all 160 assessments, scoring each one out of 54 total points. With the features available on Microsoft Excel, these raw scores were then collected and organized into data tables (see Appendices G-J), not only indicating the overall score of participants on each test but their performance on individual sections of the assessment as well. Those sections included a matching portion and two different writing portions. The written sections challenged students to either define a word within the context of a sentence or using the word itself. Once participants defined the unknown word, they were instructed to use it correctly in a sentence of their own creation. Scores on individual sections were noted so that the research questions could be answered more clearly. In terms of organization, the data itself was separated into four different

data sets: the control group pre-test, the control group post-test, the treatment group pre-test, and the treatment group post-test. These four data sets were analyzed individually and also compared to one another throughout the analysis process.

After the raw scores from all assessments were collected in the appropriate table using the four data set groups, descriptive statistics were used for analysis. Measures of central tendency, variability, and correlation were all utilized, and the results were shown in tables. More specifically, the mean and standard deviation were calculated for the control group pre-tests, control group post-tests, treatment group pre-tests, and treatment group post-tests (see Table 1). The mean, standard deviation, and correlation were then determined for specific portions of both tests for both groups as well (see Tables 2-3). This more detailed analysis helped to determine the relationship between knowledge of a word's definition and the ability to use it correctly in a sentence, which was one of the research questions.

In addition to tables, a variety of graphs were created to visually represent the data collected. Two bar graphs were formed to compare each group's overall pre-test and post-test scores, demonstrating growth over the course of the study (see Figures 1 & 3). The actual percentage growth from pre-test to post-test was displayed using two scatter plots, one for the control group and one for the treatment group (see Figures 2 & 4). Finally, to answer the second research question, four scatter plots were created to show the relationship between the number of correct definitions and number of correct sentences, one for each of the data sets (see Figures 5-8). Using the research questions identified at the beginning of the study as a guide, the results of the research were shared in the following section.

Results

Overall results of the study indicated that vocabulary instruction benefitted nearly all students in some way. Out of 80 eighth graders who participated, 76 students improved their scores from pre-test to post-test. In other words, some degree of growth was shown by 95% of participants. While the treatment group was the only one to receive supplementary, explicit instruction in word parts, both the treatment and control groups still received the same vocabulary instruction that had been implemented using student workbooks since the beginning of the school year, and the sets of words studied in the existing district curriculum over the six-week period all related to a different root. This baseline of instruction led to a demonstration of growth by the majority of participants.

Because the teacher researcher split the participants into a control group and a treatment group with only the treatment group receiving direct instruction on word parts, more specific observations were able to be made. Figure 1 below shows each student in the control group's numerical score on the pre-test compared to the post-test, with both assessments being scored out of 54 points. 35 of 39 participants in this group improved their score after six weeks of standard vocabulary instruction. Even standard instruction of ten targeted words being studied each week had a generally positive effect on 90% of students.

Figure 1

Pre-Test and Post-Test Scores for Control Group
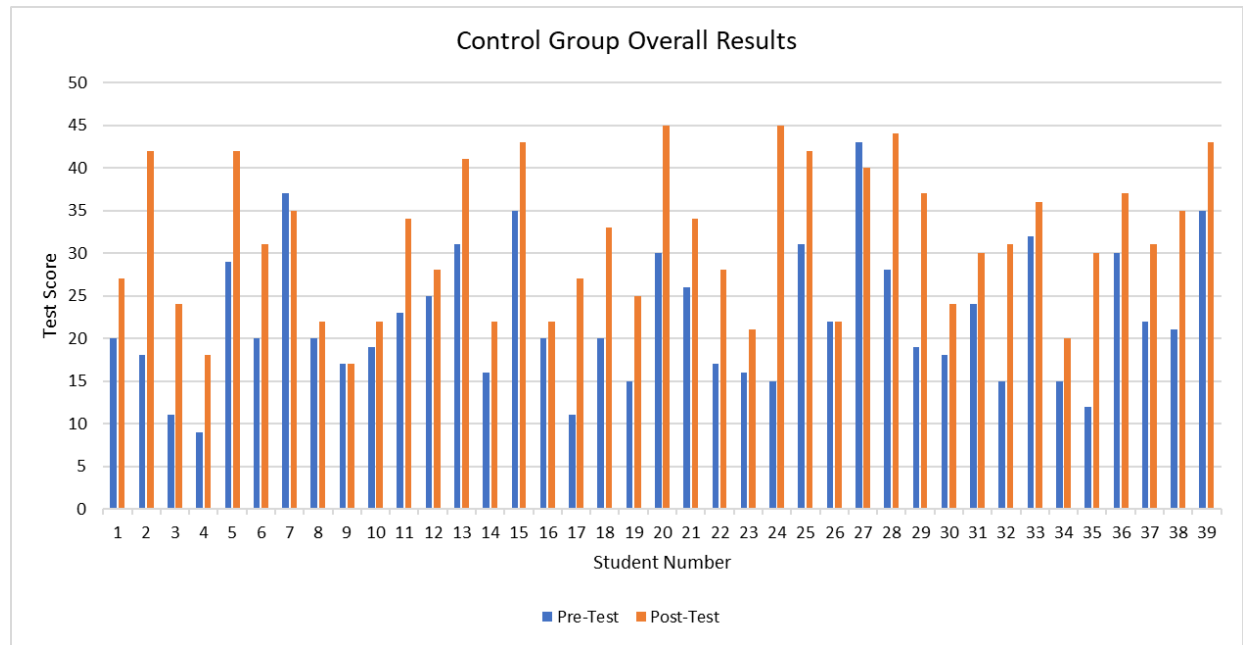
The actual percentage growth over the course of the six-week study is shown for each of the 39 participants in the control group using the scatter plot below in Figure 2. Upon evaluation of the growth percentages plotted in the graph, the mean growth percentage of the 39 students in the control group was 17.24%.

Figure 2

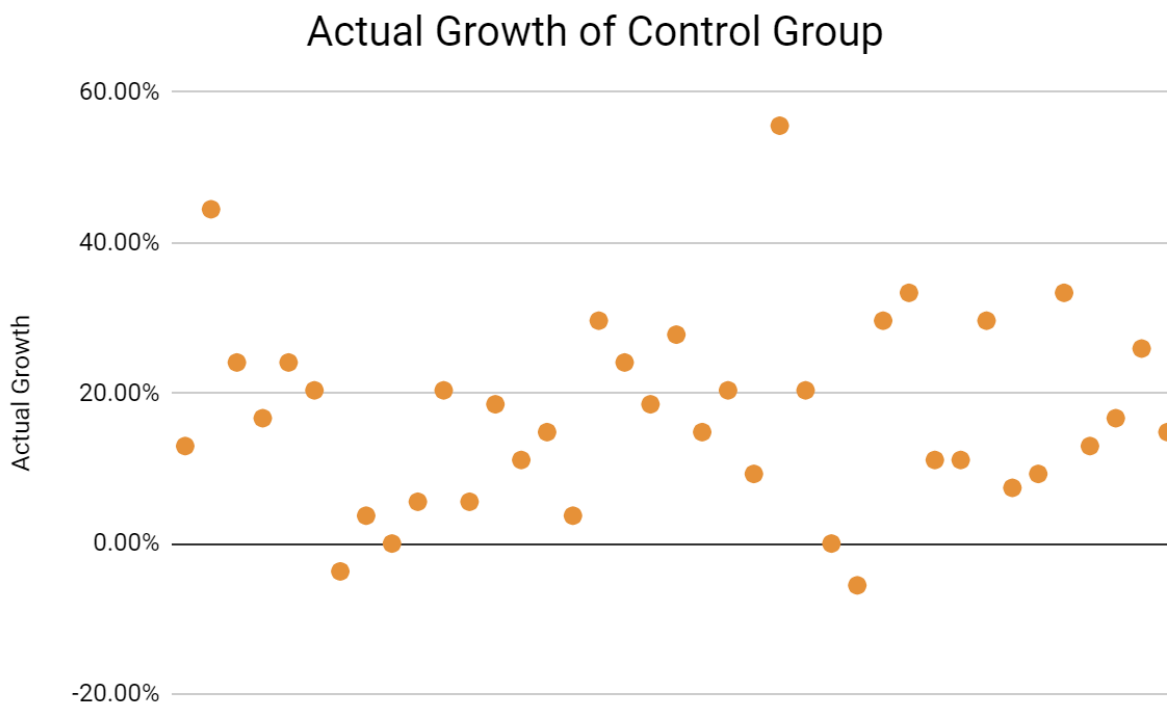*Actual Percentage Growth over Course of Study for Control Group*

Figure 3, on the other hand, shows below the overall pre-test and post-test scores for the treatment group. After six weeks of explicit, supplemental instruction on word parts as well as guided practice in using them, 100% of students in this group demonstrated improvement. 41 out of 41 students scored better on the post-test than the pre-test.

Figure 3

Pre-Test and Post-Test Scores for Treatment Group
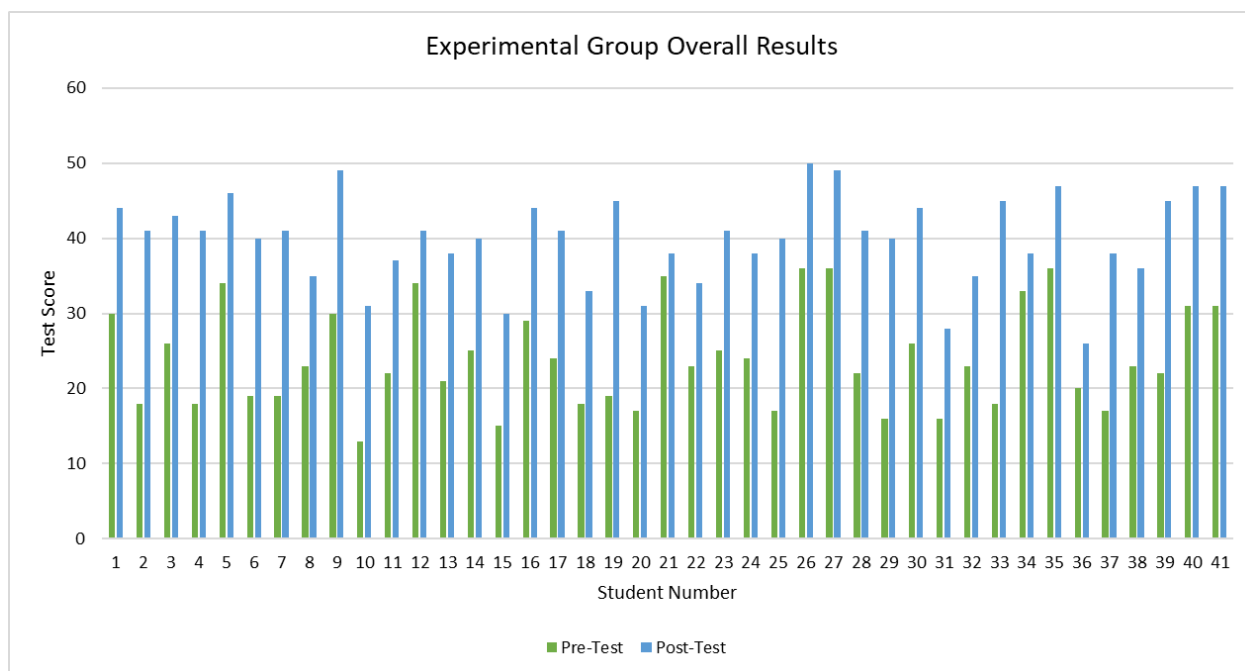
Below, Figure 4 displays the actual percentage growth for each of the 41 students who were part of the treatment group during the six-week study. This figure, too, demonstrates the gains made by students who received direct instruction in word parts. First, the majority of points in the scatter plot are noticeably higher on the growth chart than in Figure 2. In addition, the average percentage growth achieved by students in the treatment group was calculated to be 29.54%, higher than the average growth of 17.24% found in the control group. Upon comparison of these overall results from each group, the data supports the idea that incorporating explicit instruction of affixes and roots is an effective strategy for vocabulary instruction.

Figure 4

Actual Percentage Growth over Course of Study for Treatment Group
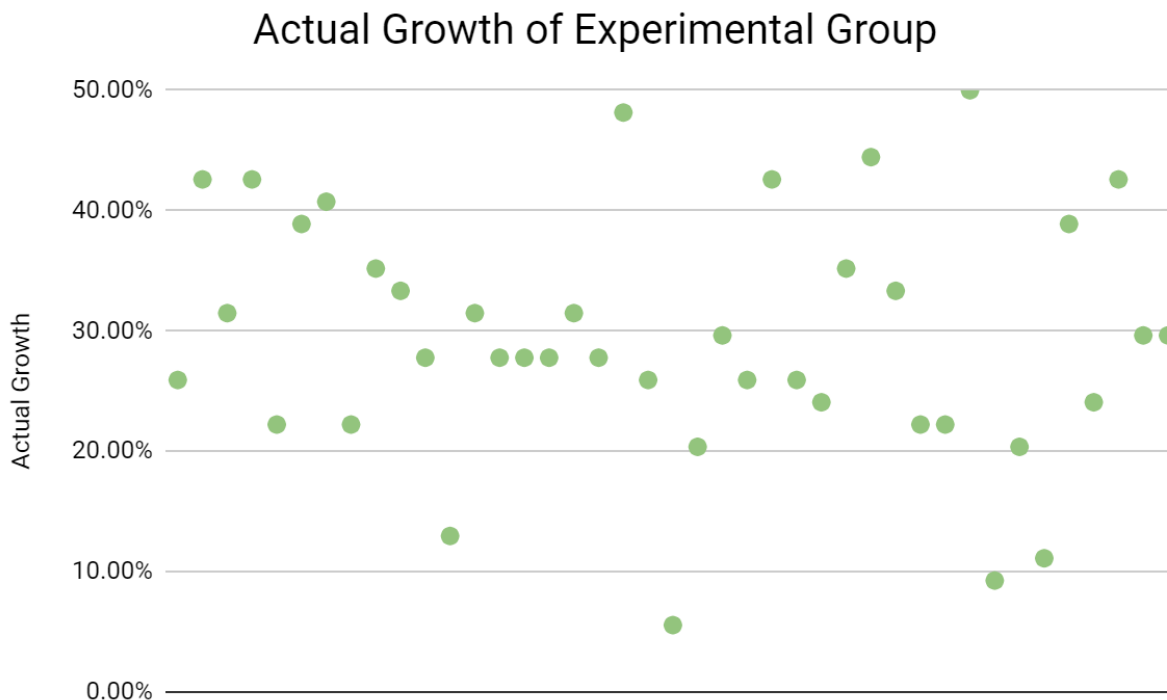
To summarize the overall results and provide a snapshot of the degree of improvement from both groups, Table 1 was created as shown below. This table details the mean and standard deviation that was calculated for each of the four data sets: the control group pre-test, the control group post-test, the treatment group pre-test, and the treatment group post-test. Upon evaluation, the mean of the scores improved by only 9 points for the control group from pre-test to post-test, while the treatment group's mean grew by almost 16 points. The standard deviation was also smaller for the post-test of the treatment group compared to the post-test of the control group. These descriptive statistics demonstrate that more growth was shown by the treatment group than the control group in the study. However, because the standard deviation for each of the four data sets was greater than one, it suggested that the individual scores were too far away from the

mean for this statistic to be used as a meaningful indicator of growth. Therefore, the researcher relied on an analysis of individual student scores, shown in Figures 1 through 4, to determine the effectiveness of direct instruction of word parts in this study.

Table 1

Mean and Standard Deviation Scores for Overall Pre-Test and Post-Test - All Data Sets

(Total Pts. Possible: 54)	Mean	Standard Deviation
CG Overall Pre-Test	22.23077	7.958648
CG Overall Post-Test	31.53846	8.444388
EG Overall Pre-Test	24	6.663332
EG Overall Post-Test	39.95122	5.843591

While the overall results of the pre-test and post-test provided a clear picture of the growth for both groups, the scores needed to be analyzed more closely within individual sections of the assessments in order to effectively answer the research questions posed at the beginning of the study. This analysis is discussed in the sections below.

Research Question One: What effect does explicit instruction of affixes and roots have on eighth grade students' ability to correctly define new words independently?

When the pre-test and post-test were created, the teacher researcher designed them with the research questions in mind. Within both the pre-test and the post-test, students were prompted to independently define an unknown word twelve times, with each attempt worth two points. Table 2 displays the mean and standard deviation that were calculated based on the students' results from the definition section of the tests. Like the previous table, this one was broken down by the four data sets, but the highest score a student could achieve was 24 points. Table 2 shows that on the post-test, the average number of correct definitions provided by a

student in the control group was only 13.28205128. In contrast, the average for the treatment

group on the post-test was 16.09756098. It was important for the researcher to note that the mean

would have been a more reliable measure of center if the standard deviations were less than one.

However, because the standard deviation of the treatment group post-test data set was smaller

than the rest of the standard deviations, it did suggest that the scores in this group were closest to

the mean out of the four data sets involved in the study. These results, when considered along

with the overall results provided above, indicate that explicit instruction of affixes and roots had

a positive effect on eighth grade students' ability to correctly define new words independently.

Students in the treatment group were better equipped to define unknown words on the test than

participants in the control group of the study.

Table 2

Mean and Standard Deviation Scores for Correct Definitions - All Data Sets

(Total Pts. Possible: 24)	**Mean**	**Standard Deviation**
CG Pre-Test Correct Definitions	9.256410256	4.29024566
CG Post-Test Correct Definitions	13.28205128	5.200954963
EG Pre-Test Correct Definitions	10.82926829	3.577026971
EG Post-Test Correct Definitions	16.09756098	3.576345048

Research Question Two: What is the relationship between students' understanding of these

new words and their ability to use them correctly in context?

The second research question focused on how students' ability to understand and define

previously unknown words related to their correct use of those words in a sentence. To address

this question, the pre-test and post-test included a section that prompted students to write their

own sentences using the unknown words they tried to define. Students' scores on the definition

and sentence sections were recorded (see Appendices G-J), and the results were compared using scatter plots and the Pearson measure of correlation to determine if a relationship was present.

Figures 5 through 8, all of which are shown below, are scatter plots that visually display the trend of the relationship between the number of correct definitions and the number of correct sentences from each of the four data sets. Figure 5 displays data from the control group pre-test; Figure 6 shows scores from the control group post-test; Figure 7 displays results from the treatment group pre-test; and Figure 8 shows data from the treatment group post-test. All four of the graphs show a similar trend; analysis indicates an upward trajectory. This trend suggests that the more definitions students have correct, the more likely they are to have a greater number of correct sentences.

Figure 5

Relationship between Correct Definitions and Sentences for Control Group Pre-Test
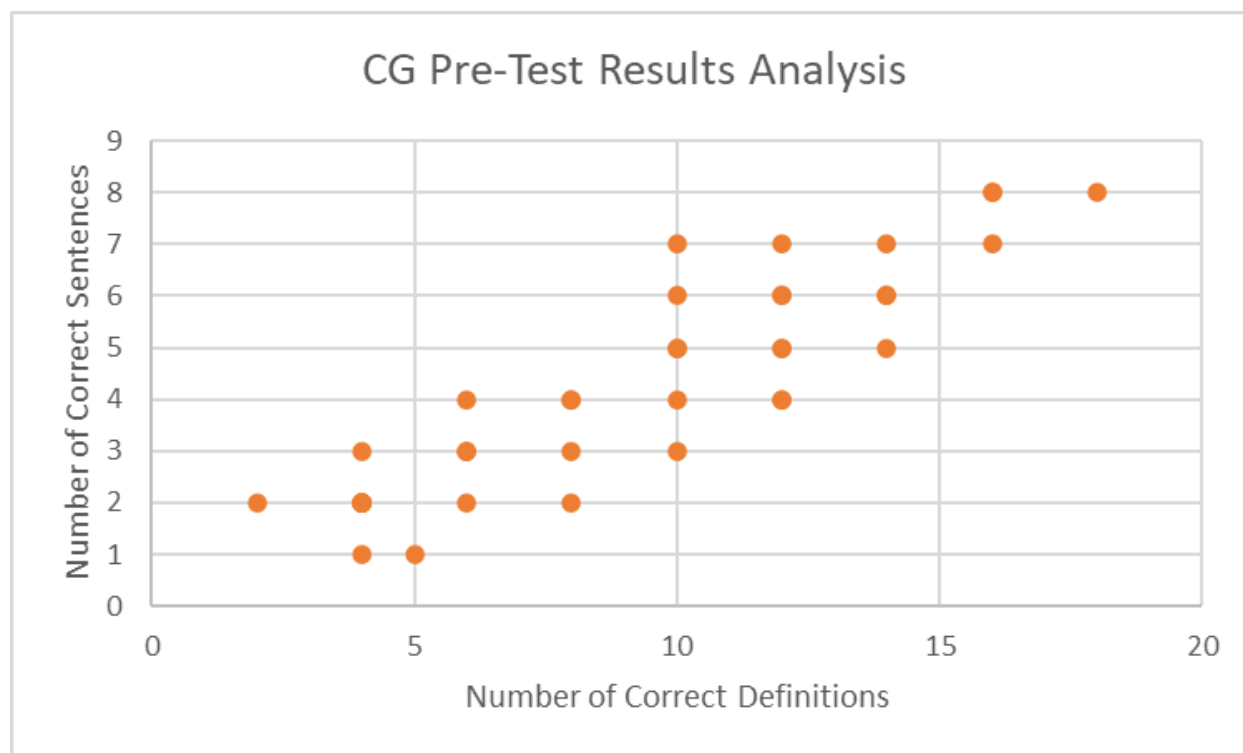
Figure 6

Relationship between Correct Definitions and Sentences for Control Group Post-Test
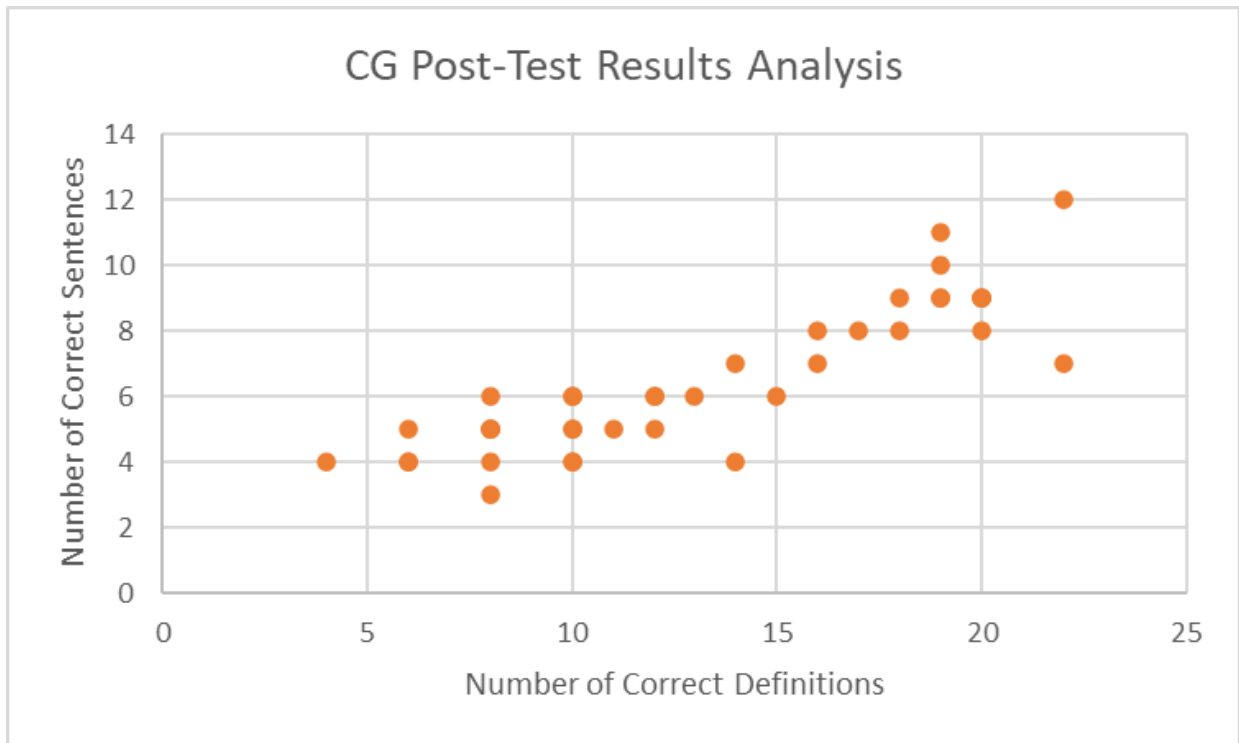
Figure 7

Relationship between Correct Definitions and Sentences for Treatment Group Pre-Test
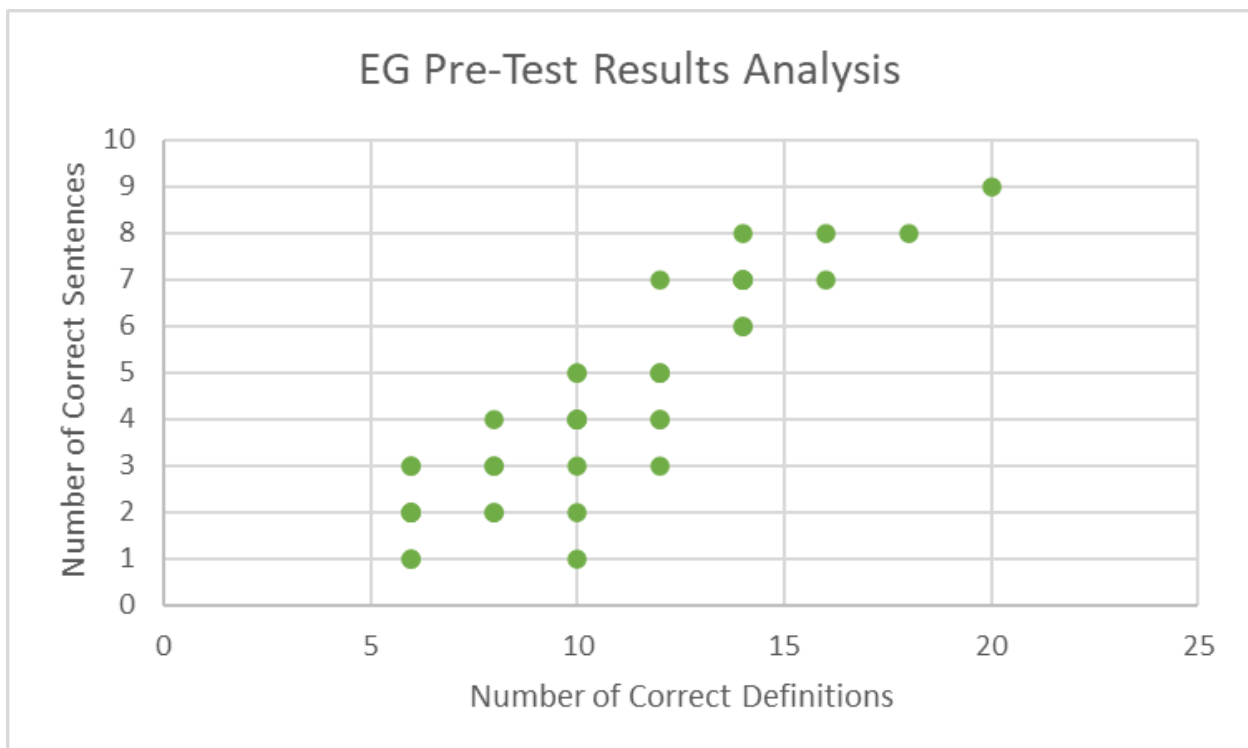
Figure 8

Relationship between Correct Definitions and Sentences for Treatment Group Post-Test
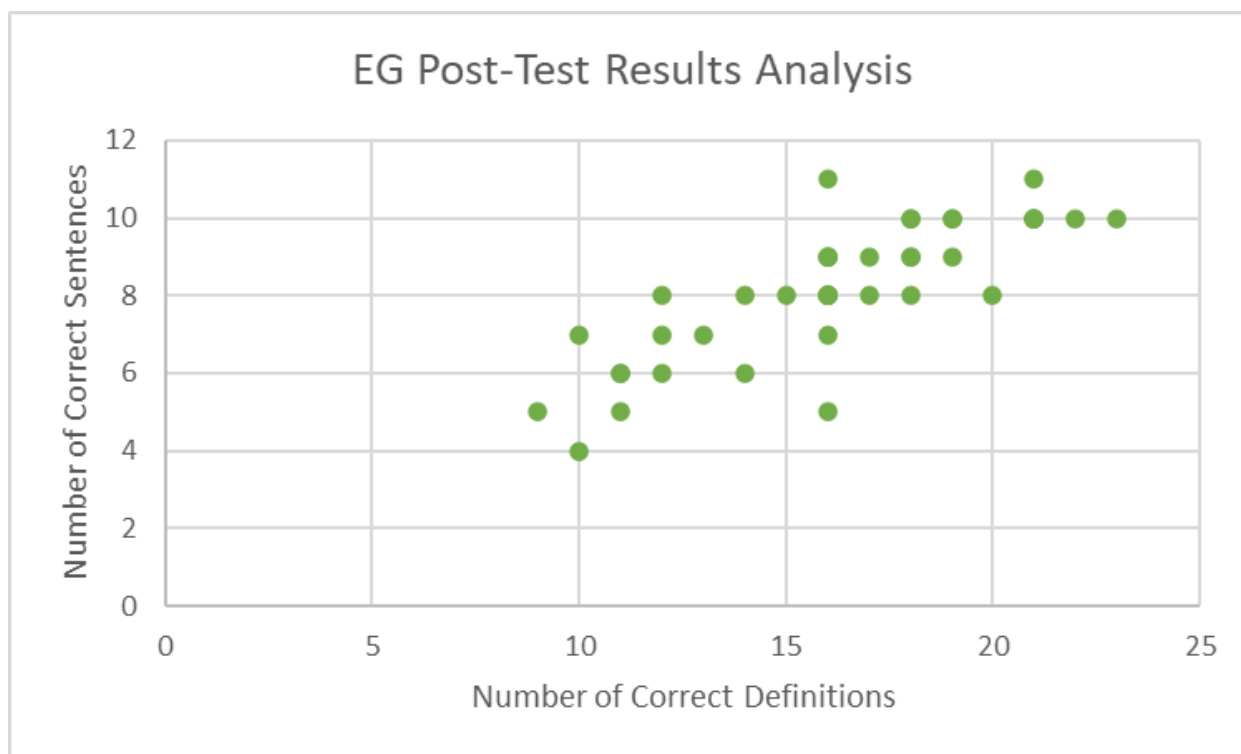
To further document the relationship between the definition and sentence scores on the assessments, the Pearson correlation test was calculated for each of the four data sets, and the results are shown below in Table 3. The control group pre-test data set had a Pearson score of 0.894967008. On the post-test, the control group had a Pearson score of 0.868843. The treatment group pre-test data set had a Pearson score of 0.892606119, and the treatment group had a Pearson score on the post-test of 0.810485. Because the results from all four data sets were within 0.2 of 1, the results suggested that there was a positive correlation between students' understanding of the new words and their ability to use them correctly in the context of a sentence.

Table 3

Relationship between Correct Definitions and Sentences - All Data Sets

	Pearson Score
Control Group Pre-Test	0.894967008
Control Group Post-Test	0.868843
Treatment Group Pre-Test	0.892606119
Treatment Group Post-Test	0.810485

Findings, Implications, and Limitations

Findings

While the research questions guided specific analysis of the results, the broader purpose

of the study was to evaluate the overall effectiveness of explicitly teaching students word parts to

build their vocabulary and provide them with the skills for successful independent word learning

in the future. Based on the results of the study, direct instruction of affixes and roots was proven

to be a useful strategy to increase students' ability to define and use unknown words on their

own. Every single student in the treatment group, the group who received explicit instruction on

word parts, demonstrated improvement from pre-test to post-test in the study. In fact, the average

percentage growth in this group was a significant 29.54%.

These findings not only answer the purpose of the study, but they also support the

original hypothesis of the teacher researcher, which was that students would be better at learning

unknown words independently after being educated on commonly used prefixes, suffixes, and

root words and how to use them. Even after breaking the scores down to analyze only the

differences in scores on the definition section of the assessments, the treatment group still

performed better than the control group on that portion of the post-test. More specifically, the

students in the treatment group outperformed the participants in the control group on this section

by nearly 3 points.

The second hypothesis made by the teacher researcher was that after using their

understanding of affixes and roots to identify the meaning of an unfamiliar word, students would

be able to use the word correctly in a sentence. The results of the study indicated that while there

was a correlation between the number of correct definitions and the number of correct sentences

in all four data sets, it was not a strong enough relationship to suggest that a correct definition

would always result in a correct sentence. In other words, students were more likely to use a word in a sentence correctly if they had the right definition, but it was not always the case. To summarize, the second hypothesis was not as strongly supported as the first hypothesis in this research study.

Implications

The results of the study support the need for continued vocabulary instruction throughout the middle school years. Unfortunately, many schools are removing vocabulary instruction from their English curriculum due to a lack of time or are grouping it in with reading and making it a secondary focus to other goals. Even with the baseline of instruction provided by the school district's vocabulary workbook curriculum, 90% of students in the control group still showed some improvement from pre-test assessment to post-test assessment in the study. These findings show that any kind of direct vocabulary instruction is better than none at all. However, when this instruction was supplemented with the explicit instruction of affixes and roots as well as how to use them, 100% of students benefited. These results confirmed the findings of multiple other studies that found word part instruction to produce positive outcomes in students (Elleman et al., 2019; Goodwin & Perkins, 2015; Manyak, Baumann, & Manyak, 2018). This type of instruction not only improved students' ability to define unknown words, but it enhanced their ability to use the words correctly in a sentence as well.

Because of its documented success, explicit instruction of word parts is a strategy that must be considered for vocabulary teaching in the middle grades. The findings of this study demonstrate this approach's ability to improve students' vocabulary, and other studies have shown how these improvements in vocabulary can in turn positively impact other important academic skills too, such as reading comprehension (Kelley et al., 2010; Lesaux et al., 2014).

When implemented effectively, explicit vocabulary instruction in word parts only takes approximately ten minutes each day, and it can go a long way in providing benefits and producing positive outcomes in students.

Limitations

In this study, there were a few limitations that could have impacted the results. For instance, the sample of students was only drawn from the teacher researcher's school, meaning that it was a convenience sample rather than one determined using randomization. Because of this sampling method, the results of the study could only reflect the given sample of students in the study; conclusions could not be drawn about the population as a whole. Future studies should include a random sample with participants from multiple schools, ensuring a variety of locations and diverse ethnic groups represented in the sample size.

Another limitation in the study was its length. The six-week study that was conducted provided a snapshot of the short-term impact that explicit instruction of affixes and roots had on students, but the results could not be used to draw conclusions about the long-term effects of the strategy. After all, the post-test was only administered six weeks after the instruction began. Future research on the topic should continue this method of explicit instruction throughout the whole school year to provide more accurate insight on the long-term effects of the approach.

Reflection and Action Plan

Reflection

Overall, the study took place as planned, and the data supported most of the hypotheses made by the teacher researcher. Students in the treatment group, the ones who received explicit instruction of word parts, performed better on the post-test than the control group. It was clear from the quantitative results obtained through the post-test that those in the treatment group were better equipped to learn new words independently than the group that continued to use only the existing vocabulary curriculum. This increased growth in the treatment group's ability to correctly define and utilize previously unknown words likely stemmed from the explicit instruction of affixes and roots that the treatment group received throughout the six weeks. This variable of direct instruction was the only intentional difference between the control group and the treatment group, so it was the most likely reason for the differing levels of improvement from pre-test to post-test in the study. Upon evaluation of the whole process, the implementation of the study went smoothly, and the results were mostly as expected. Therefore, the teacher researcher would not change anything about the way in which the research was conducted.

Action Plan

Moving forward, the teacher researcher will continue to explicitly teach affixes and roots to students, and opportunities to practice using this knowledge to define and utilize unknown words will be provided as well. However, rather than just utilizing these strategies with the treatment group like in the study, this method for vocabulary instruction will be implemented with all students from this point on. This plan will enable all students in the researcher's classroom to develop the tool of independent word learning for their own benefit in the future.

In addition to using the results and findings of the study to impact individual instructional decisions, the teacher researcher plans to disseminate the information to others. First, the results will be shared with the researcher's coworkers and administration. Rather than just sharing it in a mailbox or through email, the teacher researcher will meet personally with each person to discuss the study, the results, and the implications for classroom practice. Encouragement will be provided to the teachers both during the session and afterward in the hopes that others will try to implement the strategies in their classrooms as well. Finally, the results and findings of the study will be shared with an action research committee at Eastern Illinois University through the use of a PowerPoint Presentation with embedded audio and visuals.

Before the end of the school year, the entire English curriculum team at the junior high where the study took place must gather to choose a new vocabulary curriculum to be used beginning next fall. Knowing that the textbook adoption meeting was approaching in May, this research study was specifically designed and conducted to provide data that would enable the curriculum team to make an informed decision as to which curriculum would be best for the school's students. The results of the study were clear; explicit instruction of word parts was beneficial to students. These findings will be carefully considered when selecting a vocabulary curriculum next month for future school years. The teacher researcher will encourage the team to choose a curriculum that incorporates components of the strategies used in this study.

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Appendix: Table of Contents

Appendix A: Affixes and Roots Pre-Test and Post-Test

Matching

Match each word part to its correct meaning.

Roots

_____ 1. -duce-   a. birth, origin, family

_____ 2. -pel-   b. to carry

_____ 3. -gen-   c. to lead

_____ 4. -rupt-/-fract-   d. to break

_____ 6. -port-   e. to cry/call out

_____ 7. -clam-/-voc-   f. force, strike, or drive

Prefixes

_____ 1. co-, col-, com-, con-, cor-   a. half, part

_____ 2. ex-   b. together

_____ 3. uni-, mono-   c. not

_____ 4. dis-, un-, in-, im-, il-, ir-, non-, de-   d. one

_____ 6. semi-   e. again, back

_____ 7. re-   f. to take away

_____ 8. de-   g. out of, away from

Suffixes

_____ 1. -ee, -er, -ian, -ist, -or   a. full of

_____ 2. -ful   b. can be, worthy of

_____ 3. -able   c. person

_____ 4. -ible   d. inclined to, without, free of

_____ 5. -less   e. characterized by

Defining New Words - Sentences
     Read the sentence. Write your definition of the word and use it in your own sentence.
1. Many different streams ***converge*** to form the river.

    a) Definition: _____

    b) Your Sentence: _____

2. After they copied the loose sheets, the assistants had to ***collate*** them.

    a) Definition: _____

    b) Your Sentence: _____

3. After Vicki improved her grades, her privileges were ***reinstated***.

    a) Definition: _____

    b) Your Sentence: _____

4. The man was diagnosed with a ***degenerative*** condition that reduces his eyesight over time.

    a) Definition: _____

    b) Your Sentence: _____

5. The noisy room was not ***conducive*** to a good night's sleep.

    a) Definition: _____

    b) Your Sentence: _____

6. Because of the nature of the profession, it is essential for police officers to be ***incorruptible***.

    a) Definition: _____

    b) Your Sentence: _____

Defining New Words - Word Only

  Read the word. Using your understanding of word parts, write your definition of the word and use it in your own sentence.

1. *semicentennial*

  a) Definition: _____

  b) Your Sentence: _____

2. *inedible*

  a) Definition: _____

  b) Your Sentence: _____

3. *irrevocable*

  a) Definition: _____

  b) Your Sentence: _____

4. *dispel*

  a) Definition: _____

  b) Your Sentence: _____

5. *clamorous*

  a) Definition: _____

  b) Your Sentence: _____

6. *contrarian*

  a) Definition: _____

  b) Your Sentence: _____

Appendix B: Data Collection Timeline

Week #	Targeted Word Parts	Data Collection	Instruction for All Students	Word Part Activity For Exp. Group	Notes
Week 1 2/13-2/17	<u>Root Word</u>: -duce- <u>Prefixes</u>: "together" family ● co- ● col- ● com- ● con- ● cor-	<u>Day 1</u> - Administer Pre-Test	<u>Day 1</u> - Introduce 10 Targeted Words <u>Day 2</u> - Workbook Page: Use Words in Sentences <u>Day 3</u> - Workbook Page: Understand Words in Story Context <u>Day 4</u> - Workbook Page: Apply Words to Life <u>Day 5</u> - Test over Words: Spell and Define	<u>Day 1</u> - Explicitly Teach Root <u>Day 2</u> - Explicitly Teach Prefixes <u>Day 4</u> - Identify in Sentences Practice <u>Ongoing</u> -Identify Word Part Examples Around Them	
Week 2 2/20-2/24	<u>Root Word</u>: -pel- <u>Prefixes</u>: "number" family ● uni- ● mono- ● bi- ● tri- ● quad- ● dec- ● cent- ● semi-		<u>Day 2</u> - Introduce 10 Targeted Words and Workbook Page: Use Words in Sentences <u>Day 3</u> - Workbook Page: Understand Words in Story Context <u>Day 4</u> - Workbook Page: Apply Words to Life <u>Day 5</u> - Test over Words: Spell and Define	<u>Day 2</u> - Explicitly Teach Root Word <u>Day 5</u> - Explicitly Teach Prefixes <u>Day 5</u> - Identify with Word Only Practice <u>Ongoing</u> -Identify Word Part Examples Around Them	*No School on Day 1 of this week (Presidents' Day)
Week 3 2/27-3/3	<u>Root Word</u>: -gen- <u>Prefixes</u>: ● re- ● de- ● ex- ● under-		<u>Day 1</u> - Introduce 10 Targeted Words <u>Day 2</u> - Workbook Page: Use Words in Sentences <u>Day 3</u> - Workbook Page: Understand Words in Story Context <u>Day 4</u> - Workbook Page: Apply Words to Life <u>Day 5</u> - Test over Words: Spell and Define	<u>Day 1</u> - Explicitly Teach Word Part (Pt. 1) <u>Day 2</u> - Explicitly Teach Word Part (Pt. 2) <u>Day 3</u> - Word Family Grouping <u>Day 4</u> - Identify in Sentences Practice <u>Day 5</u> - Identify with Word Only Practice <u>Ongoing</u> -Identify Word Part Examples Around Them	
Week 4 3/6-3/10	<u>Root Words</u>: -rupt- -fract-		<u>Day 1</u> - Introduce 10 Targeted Words and Workbook Page: Use Words in Sentences	<u>Day 1</u> - Explicitly Teach Word Part (Pt. 1) <u>Day 2</u> - Explicitly Teach Word Part (Pt. 2)	*No School on Day 4 of this week (State Finals

	Prefixes: "not" family ● dis- ● un- ● in- ● im- ● il- ● ir- ● non- ● de-		Day 2 - Workbook Page: Understand Words in Story Context Day 3 - Workbook Page: Apply Words to Life Day 5 - Test over Words: Spell and Define	Day 3 - Word Family Grouping Day 5 - Identify with Word Only Practice Ongoing -Identify Word Part Examples Around Them	in Basketball)
Week 5 3/13-3/17	Root Word: -port- Suffixes: ● -ful ● -able ● -ible ● -less		Day 1 - Introduce 10 Targeted Words Day 2 - Workbook Page: Use Words in Sentences Day 3 - Workbook Page: Understand Words in Story Context Day 4 - Workbook Page: Apply Words to Life Day 5 - Test over Words: Spell and Define	Day 1 - Explicitly Teach Word Part (Pt. 1) Day 2 - Explicitly Teach Word Part (Pt. 2) Day 3 - Word Family Grouping Day 4 - Identify in Sentences Practice Day 5 - Identify with Word Only Practice Ongoing -Identify Word Part Examples Around Them	
Week 6 3/20-3/24	Root Word: -clam- -voc- Suffixes: "person" family ● -ee ● -er ● -ian ● -ist ● -or	Day 5 - Administer Post-Test	Day 1 - Introduce 10 Targeted Words Day 2 - Workbook Page: Use Words in Sentences Day 3 - Workbook Page: Understand Words in Story Context Day 4 - Workbook Page: Apply Words to Life Day 5 - Test over Words: Spell and Define	Day 1 - Explicitly Teach Word Part (Pt. 1) Day 2 - Explicitly Teach Word Part (Pt. 2) Day 3 - Word Family Grouping Day 4 - Identify in Sentences Practice Day 5 - Identify with Word Only Practice Ongoing -Identify Word Part Examples Around Them	

Appendix C: Institutional Review Board Approval Letter

February 1, 2023

Allison Deters
Amy Davis
Teaching, Learning, and Foundations

Dear Allison,

Thank you for submitting the research protocol titled, "Vocabulary Instruction in the Middle Grades: Moving Past Memorization" for review by the Eastern Illinois University Institutional Review Board (IRB). The IRB has reviewed this research protocol and effective 2/1/2023, has certified this protocol meets the federal regulations exemption criteria for human subjects research. The protocol has been given the IRB number 23-005. You are approved to proceed with your study.

The classification of this protocol as exempt is valid only for the research activities and subjects described in the above named protocol. IRB policy requires that any proposed changes to this protocol must be reported to, and approved by, the IRB before being implemented. You are also required to inform the IRB immediately of any problems encountered that could adversely affect the health or welfare of the subjects in this study. Please contact me, or the Compliance Coordinator at 581-8576, in the event of an emergency. All correspondence should be sent to:

Institutional Review Board
c/o Office of Research and Sponsored Programs
Telephone: 217-581-8576
Fax: 217-581-7181
Email: eiuirb@eiu.edu

Thank you for your cooperation, and the best of success with your research.

John Bickford, Chairperson
Institutional Review Board
Telephone: 217-581-7881
Email: jbickford@eiu.edu

Appendix D: Principal Approval Letter

Teutopolis Community Unit
SCHOOL DISTRICT NO. 50

P.O. Box 607
Teutopolis, IL 62467-0607
Phone: 217-857-3535
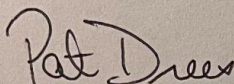
Matt Sturgeon
Superintendent
Fax: 217-857-6265

January 17, 2023

Dear Institutional Review Board Members,

As principal of Teutopolis Junior High School, I approve the appropriateness of Allison Deters's action research project study titled *Vocabulary Instruction in the Middle Grades: Moving Past Memorization*. Allison Deters and I discussed the components of the study as well as the expected outcomes. The project will analyze how teaching word parts to eighth grade students can help them to determine the meaning of new words independently in the future. She will be conducting the study as a part of her everyday instruction. Conducting this project at Teutopolis Junior High School is very feasible and should be completed before the end of the semester. If you have any questions, feel free to contact me at the email address below.

Sincerely,

Pat Drees
TJHS Principal
Teutopolis Unit #50
904 W. Water St.
Teutopolis, IL 62467
dreesp@ttown.k12.il.us

Appendix E: Parent-Guardian Letter

Dear Parents/Guardians:

I am currently working toward my Master's Degree in Curriculum and Instruction at Eastern Illinois University (EIU). As a requirement for my coursework, I will be completing an Action Research Project focusing on how teaching word parts to eighth grade students can help them to determine the meaning of new words on their own in the future. This project will include data collection and analysis of their test scores after instruction.

My reasoning for this study is to determine the effectiveness of teaching students word parts that are commonly used in grade-level texts. Students will participate in the study for six weeks, and all work will be completed in the classroom setting. No work related to this study will be required of students outside of class. Before it begins, students will complete a pre-test to determine prior knowledge. Each week for six weeks, students will engage in short, daily, in-class activities around a targeted group of word parts. At the study's conclusion, they will complete a post-test.

The results collected from this study will be used for the purpose of this project *only*. All data will be kept confidential, and the presented results will not contain any identifying information or names of the participants. There are minimal foreseeable risks, and students could benefit by improving their ability to learn new words independently in the future. As parents or guardians, you have the option to exclude your child from this study. Participation is voluntary, and refusal to participate will involve no penalty to your child. Please contact me as soon as possible if you do not want your child included. You may withdraw your child from participation at any time during the six weeks without penalty as well.

I have been granted approval by our building principal, Pat Drees, to conduct this research in my classroom. If you have any questions or concerns, please feel free to contact Dr. Amy D. Davis, my professor and co-investigator on this research project, or me. I have included the contact information for each of us below. You may also contact the Institutional Review Board (IRB) with questions or concerns you have regarding the treatment of your child in this study. The IRB at Eastern Illinois University is responsible for reviewing and approving all research involving students before it is conducted. The study that I will be conducting has been reviewed and approved by this board.

Thank you,
Allison Deters
TJHS Communications/Math Teacher
Teutopolis Unit #50
904 W. Water St. Teutopolis, IL 62467
detersa@ttown.k12.il.us
(217) 857-6678

Dr. Amy D. Davis	**Institutional Review Board**
Assistant Professor – Elementary Literacy	Office of Research and Sponsored Programs
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Appendix F: Student Assent Letter

Dear Students,

      Right now, I am working on earning my master's degree at Eastern Illinois University. As part of one of my classes, I will be studying the effectiveness of teaching word parts as we learn and work with our new spelling words.

      If you choose to participate, you will not need to do anything different outside of class than what we normally do for spelling each week. A few in-class activities that focus on word parts will be incorporated into our in-class routine, and I will simply be comparing your pre-test scores before the six-week unit to your post-test scores after the unit is completed. I will present my results to my teacher, but your names will not be included in my report. There is very little risk to participating, and you could learn something new by being a part of the study.

      The unit will be six weeks long. Your participation is optional; if you don't want me to review your scores, please let me know. You will continue with our spelling lessons and tests as usual, and there will be no penalty at all for choosing not to participate. You can decide not to participate while the unit is taking place as well. Just let me know at any time if you would like to be removed. Mr. Drees has approved the unit. You can let me know if you have any questions, or you can ask Mr. Drees too.

      Thanks,

      Mrs. Deters

Appendix G: Pre-Test Raw Scores for Control Group Participants

Student Number	Class	Pre-Test Overall Score	Matching (18)	Def. w/ Sentence (12)	Sentence w/ Sentence (6)	Def. w/ Word Only (12)	Sentence w/ Word Only (6)
1	1st	20	14	4	2	0	0
2	1st	18	12	4	2	0	0
3	1st	11	6	4	1	0	0
4	1st	9	3	4	2	0	0
5	1st	29	11	4	2	8	4
6	1st	20	8	4	2	4	2
7	1st	37	13	12	6	4	2
8	1st	20	11	4	2	2	1
9	1st	17	7	4	4	2	0
10	1st	19	6	6	1	4	2
11	1st	23	11	4	2	4	2
12	1st	25	5	12	5	2	1
13	1st	31	11	10	4	4	2
14	1st	16	7	4	2	2	1
15	1st	35	12	12	5	4	2
16	1st	20	10	4	1	4	1
17	1st	11	5	4	1	1	0
18	1st	20	4	10	3	2	1
19	1st	15	9	2	1	2	1
20	1st	30	14	4	1	8	3
21	1st	26	9	6	2	6	3
22	1st	17	10	2	3	2	0
23	1st	16	10	4	2	0	0
24	1st	15	8	6	4	4	3
25	7th	31	12	8	5	4	2
26	7th	22	8	6	2	4	2
27	7th	43	17	12	5	6	3
28	7th	28	9	10	3	4	2
29	7th	19	4	8	4	2	1
30	7th	18	7	6	2	2	1
31	7th	24	8	8	5	2	1
32	7th	15	9	4	2	0	0
33	7th	32	14	6	3	6	3
34	7th	15	7	6	2	0	0
35	7th	12	8	2	2	0	0
36	7th	30	9	12	6	2	1
37	7th	22	7	8	4	2	1
38	7th	21	4	6	2	6	3
39	7th	35	11	12	6	4	2

Appendix H: Post-Test Raw Scores for Control Group Participants

Student Number	Class	Post-Test Overall Score	Matching (18)	Def. w/ Sentence (12)	Sentence w/ Sentence (6)	Def. w/ Word Only (12)	Sentence w/ Word Only (6)
1	1st	27	14	6	3	2	2
2	1st	42	14	10	3	10	5
3	1st	24	14	4	3	2	1
4	1st	18	7	6	3	2	0
5	1st	42	13	10	4	10	5
6	1st	31	16	6	3	4	2
7	1st	35	16	10	2	4	2
8	1st	22	8	4	3	4	3
9	1st	17	6	6	5	0	0
10	1st	22	10	4	2	4	2
11	1st	34	13	9	3	6	3
12	1st	28	10	10	5	2	1
13	1st	41	12	10	3	12	4
14	1st	22	8	6	3	4	1
15	1st	43	16	12	6	6	3
16	1st	22	9	6	4	2	1
17	1st	27	9	8	4	4	2
18	1st	33	4	12	5	8	4
19	1st	25	12	2	2	6	3
20	1st	45	16	10	5	9	5
21	1st	34	13	8	4	6	3
22	1st	28	13	8	4	2	1
23	1st	21	11	4	3	2	1
24	1st	45	11	12	6	10	6
25	7th	42	12	12	6	7	5
26	7th	22	8	6	2	4	2
27	7th	40	12	12	5	7	4
28	7th	44	16	10	4	9	5
29	7th	37	14	12	5	4	2
30	7th	24	8	6	4	4	2
31	7th	30	14	8	5	2	1
32	7th	31	12	8	3	5	3
33	7th	36	11	8	3	9	5
34	7th	20	12	2	2	2	2
35	7th	30	14	7	3	4	2
36	7th	37	11	12	5	6	3
37	7th	31	14	10	4	2	1
38	7th	35	11	9	4	7	4
39	7th	43	14	12	6	8	3

Appendix I: Pre-Test Raw Scores for Treatment Group Participants

Student Number	Class	Pre-Test Overall Score	Matching (18)	Def. w/ Sentence (12)	Sentence w/ Sentence (6)	Def. w/ Word Only (12)	Sentence w/ Word Only (6)
1	2nd	30	9	8	5	6	2
2	2nd	18	11	4	0	2	1
3	2nd	26	5	10	5	4	2
4	2nd	18	6	4	2	4	2
5	2nd	34	14	8	3	6	3
6	2nd	19	8	8	3	0	0
7	2nd	19	9	8	2	0	0
8	2nd	23	10	6	1	4	2
9	2nd	30	11	10	5	2	2
10	2nd	13	5	4	1	2	1
11	2nd	22	7	8	3	4	0
12	2nd	34	13	10	5	4	2
13	2nd	21	6	8	5	2	0
14	2nd	25	4	10	5	4	2
15	2nd	15	8	4	1	2	0
16	2nd	29	6	10	4	6	3
17	2nd	24	10	6	2	4	2
18	2nd	18	10	4	1	2	1
19	2nd	19	3	8	3	4	1
20	2nd	17	9	4	1	2	1
21	2nd	35	9	12	5	6	3
22	2nd	23	6	10	4	2	1
23	2nd	25	11	4	2	6	2
24	2nd	24	10	8	3	2	1
25	2nd	17	7	6	1	2	1
26	8th	36	7	10	4	10	5
27	8th	36	14	8	4	6	4
28	8th	22	10	6	1	4	1
29	8th	16	7	4	1	2	2
30	8th	26	11	8	4	2	1
31	8th	16	7	4	2	2	1
32	8th	23	9	8	3	2	1
33	8th	18	7	6	2	2	1
34	8th	33	13	8	3	6	3
35	8th	36	12	10	5	6	3
36	8th	20	9	8	0	2	1
37	8th	17	9	6	2	0	0
38	8th	23	7	10	3	2	1
39	8th	22	5	12	5	0	0
40	8th	31	10	10	5	4	2
41	8th	31	14	12	5	0	0

Appendix J: Post-Test Raw Scores for Treatment Group Participants

Student Number	Class	Post-Test Overall Score	Matching (18)	Def. w/ Sentence (12)	Sentence w/ Sentence (6)	Def. w/ Word Only (12)	Sentence w/ Word Only (6)
1	2nd	44	16	12	5	7	4
2	2nd	41	16	8	5	8	4
3	2nd	43	18	10	4	7	4
4	2nd	41	15	10	5	7	4
5	2nd	46	14	10	5	11	6
6	2nd	40	16	10	5	6	3
7	2nd	41	14	8	6	8	5
8	2nd	35	18	7	4	4	2
9	2nd	49	16	12	5	11	5
10	2nd	31	14	6	3	5	3
11	2nd	37	16	8	2	8	3
12	2nd	41	13	10	6	8	4
13	2nd	38	13	11	6	5	3
14	2nd	40	12	8	5	10	5
15	2nd	30	14	10	5	1	0
16	2nd	44	16	10	3	10	5
17	2nd	41	17	10	5	6	3
18	2nd	33	13	8	4	5	3
19	2nd	45	18	10	4	8	5
20	2nd	31	13	7	4	5	2
21	2nd	38	14	8	4	8	4
22	2nd	34	15	10	5	2	2
23	2nd	41	18	9	3	7	4
24	2nd	38	13	10	6	6	3
25	2nd	40	16	9	4	7	4
26	8th	50	18	12	5	10	5
27	8th	49	18	12	5	9	5
28	8th	41	18	8	4	7	4
29	8th	40	16	8	4	8	4
30	8th	44	18	12	5	6	3
31	8th	28	14	6	2	3	3
32	8th	35	18	4	3	6	4
33	8th	45	16	9	5	10	5
34	8th	38	18	6	2	8	4
35	8th	47	16	12	5	9	5
36	8th	26	12	6	2	4	2
37	8th	38	16	8	5	6	3
38	8th	36	16	6	3	6	5
39	8th	45	18	9	5	9	4
40	8th	47	16	12	5	9	5
41	8th	47	18	12	6	7	4