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THE EFFECTS OF TEACHING PREFIX MEANING AND A STRATEGY TO
DERIVE WORD MEANING ON A PREFIX VOCABULARY TEST AND
SENTENCE COMPREHENSION TEST FOR MIDDLE SCHOOL STUDENTS
WITH LEARNING DISABILITIES

by

Shannon K. Harris

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Special Education

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Logan, Utah

2010

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ABSTRACT

The Effects of Teaching Prefix Meaning and a Strategy to
Derive Word Meaning on a Prefix Vocabulary Test and
Sentence Comprehension Test for Middle School
Students with Learning Disabilities

by

Shannon K. Harris, Master of Science

Utah State University, 2010

Major Professor: Dr. Benjamin Lignugaris/Kraft
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Previous researchers have concluded that there is a need for determining how vocabulary instruction effects vocabulary comprehension and reading comprehension for young learners. Researchers have implemented morphemic strategies in various studies to identify effective methods for vocabulary instruction. In the present study, four prefixes were taught to students with disabilities to extend vocabulary research by using a morphological approach with a focus on prefix instruction. In addition students were taught how to combine the meaning of a prefix to the meaning of a root word. Data patterns indicate an increase in students' ability to provide definitions for prefixed words while the transfer to reading comprehension was minimal. The results of this study provide direction for future research in implementing a morphemic approach for vocabulary instruction.

(154 pages)

ACKNOWLEDGMENTS

Completing my master's degree has been a challenging journey and this thesis is the final product of many years of growth and struggle. I want to first acknowledge my parents for blessing my life with opportunities to improve and achieve good things. Their support and patience through this process have been remarkable.

I want to thank the students who participated in this study and gave such a strong effort to do everything I asked them to do. I also want to thank Amy Tolman for her support and for allowing me to teach in her classroom.

Members of my committee provided their expertise and confidence for this research. Many thanks to David Forbush, Tim Slocum, and Scott Ross for their insight and encouragement.

I extend my greatest appreciation to Ben Lignugaris/Kraft, my major professor. Dr. Lignugaris/Kraft has supported and challenged me throughout this process and has been an outstanding teacher. His contribution to this project is immeasurable. His instruction, guidance, and unbelievable patience have helped me become a better student and have contributed to my personal development as well.

Finally, I acknowledge God's hand in all of my educational pursuits and in any personal success I have experienced in my life.

Shannon K. Harris

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CHAPTER I

INTRODUCTION

Children who cannot or do not read tend to have vocabularies limited to their immediate environments (Foil & Alber, 2002). This limitation may lead to poor reading comprehension, which may then lead to less reading and ultimately result in reduced vocabulary acquisition. These delays, though minor in the beginning, tend to increase over time. Further, struggling readers are often presented with reading material that is too difficult and this may promote avoidance of reading activities and lack of progress (Hempenstall, 1996).

The National Reading Panel (NRP, 2000) concluded that comprehension is comprised of two skills: word knowledge (or vocabulary) and reasoning in reading (or comprehension). Some researchers suggest that the best way to become a better reader is to read (Cunningham & Stanovich, 2003). Although this proposal seems to be the ideal solution, it is not applicable to every individual. For children who are fluent readers, Cunningham and Stanovich suggested that vocabulary develops from the volume of material read, while for children who are less fluent readers, vocabulary development requires endless reading practice and may never develop sufficiently. Further, poor readers, such as those with learning disabilities, tend to read easier materials and fewer books compared to good readers. This results in less exposure to unfamiliar words and fewer opportunities to expand their vocabulary.

Vocabulary knowledge is necessary at all stages of development, but vocabulary demands of texts increase substantially beginning at fourth-grade level, when students

have increased exposure to expository text, making vocabulary acquisition a critical subskill (Spear-Swerling, 2006). If a child is unfamiliar with the meaning of words in a text, comprehension will suffer (Spear-Swerling, 2006). After the middle elementary grades students become more vulnerable to difficulties with reading due to the higher reading demands involved in the curriculum, especially those children with vocabulary weaknesses. Baker, Simmons, and Kame'enui (1995) concluded that "the primary difficulty with sustaining early gains in reading is the lack of adequate vocabulary to meet broad academic demands that begin in the upper-elementary grades" (p. 3).

Vocabulary deficits are even more pronounced for children who have learning disabilities (Jitendra, Edwards, Sacks, & Jacobson, 2004). Jitendra et al., in a recent meta-analysis of vocabulary research, reported that the biggest obstacles for these students were that they (1) engage in lower levels of independent reading, (2) lack strategies to learn words from context, and (3) have a "less complete" knowledge of word meanings altogether (p. 300). Too often, these learners are asked to develop original combinations of concepts with insufficient tools and inadequate vocabulary knowledge (Baker et al., 1995). Finding time for vocabulary development for these learners can be difficult as the majority of their instructional time is usually spent on decoding. Because reading and oral vocabulary usage is significantly lower for students with learning disabilities than their peers, MacLean (2000) has suggested that strategic vocabulary instruction could have a positive impact on these students.

One strategy to help develop vocabulary is morphemic analysis. In morphemic analysis students learn how to divide a word into meaningful parts and derive a meaning for the whole word (Ives, Bursuk, & Ives, 1979). Morphemes include word roots,

prefixes and suffixes, and inflected endings (Baumann & Kame'enui, 2004). Knowledge of these word parts helps students identify new words and infer meaning—ultimately increasing reading comprehension. In several studies in which researchers examined morphemic analysis strategies, students with and without learning disabilities improved their vocabulary knowledge and comprehension (Anglin, Miller, & Wakefield, 1993; Stahl & Nagy, 2006).

The purpose of this study was to examine morphemic prefix instruction as a means to enhance word knowledge and reading comprehension for students with learning disabilities. The primary research questions addressed in this study are:

1. To what extent does morphemic prefix instruction increase the percentage of correct responses on a prefixed word assessment for middle school students with learning disabilities?

2. Given an increase in correct responding on the prefixed word assessment as a result of morphemic prefix instruction, to what extent do middle school students with learning disabilities increase the percentage of correct responses to questions on a sentence comprehension assessment?

CHAPTER II

REVIEW OF LITERATURE

The purpose of this review is to critically examine previous investigations that were designed to increase word knowledge, or vocabulary, and reading comprehension for students with learning disabilities. In particular, studies were examined that focused on specific vocabulary interventions and the generalization of the vocabulary to other contexts.

Articles selected for this review of literature were located by (a) computer searches of the ERIC via EBSCOHost, ERIC via The Department of Education, Psychology and Behavioral Sciences Collection, PsychINFO, and WilsonWeb, for the years 1966 to 2007, and (b) reviewing lists from primary and secondary sources. The following terms were used in computer searches of the literature: (a) vocabulary instruction, (b) morphemes, (c) students with disabilities, (d) vocabulary methods, (e) prefix instruction, (f) morphograph studies, (g) reading comprehension, and (h) vocabulary strategies. Literature reviews that addressed vocabulary instruction for students with disabilities and studies that specifically addressed morphemic instruction were included in this literature review. Other articles were located in which the authors provided suggestions for teacher-generated curricula, classroom vocabulary practice, and implementation of different strategies to see which proved helpful in students' vocabulary success. This search yielded 15 articles (6 research studies and 9 literature reviews). Reviews of past research studies were mostly located in books on vocabulary and vocabulary instruction (Allen, 1999; Baumann & Kame'enui, 2004; Beck, McKeown, & Kucan, 2002; Graves, 2006; Ives et al., 1979; Stahl & Nagy, 2006).

Rationale for Vocabulary Instruction

Acquiring a large vocabulary is not a simple task because each student enters the classroom with different background knowledge, different word associations, and different strategies to learn new words. In general, the vocabulary learning task students face is enormous. There is increasing evidence that a limited vocabulary is a substantial obstacle to success in reading comprehension (Graves, 2004).

Vocabulary is used in a variety of contexts, from understanding and using new words in conversation to expressing a specific idea. In relationship to reading, the NRP narrowed the definition of vocabulary to Oral Vocabulary, or words that are recognized in speaking or listening, and Reading Vocabulary, words that are used or recognized in print (National Reading Panel, 2000). Although it was emphasized that vocabulary in all its forms is extremely important, there are no approaches to vocabulary instruction with definitive research support. Moreover, the NRP (2000) stated:

Many studies have shown that reading ability and vocabulary size are related, but the *causal* link between increasing vocabulary and an increase in comprehension has not been demonstrated. That is, it has been difficult to demonstrate that teaching vocabulary improves reading ability. (pp. 4-15)

Naturalistic Strategies for Teaching Vocabulary

Exposure to Words in Context

Jitendra et al. (2004) suggested that the most effective independent word learning strategy is the development of proficient reading skills. This is supported by Cunningham and Stanovich (2003) who stated, “the more children read, the greater their vocabulary and the better their cognitive skills” (p. 34). Cunningham and Stanovich also

reported that reading volume, not oral language, is the primary source of vocabulary differences among children. Thus, exposure to words in context is as important as providing instruction for students using oral language techniques. Based on their research, Cunningham and Stanovich concluded that a high level of reading engagement is a primary source of vocabulary development. Most vocabulary is acquired outside of formal teaching and opportunities to learn new words occur more often when reading rather than listening (Cunningham & Stanovich, 2003). The challenge, then, is to expose children to new words and low-frequency words for vocabulary growth to occur, even though many struggling readers are reported to participate in lower levels of reading engagement.

Naturally, as students learn to read, the skill of decoding and reading words in general is mastered before comprehension. This is why many children can read words and give the impression of having strong comprehension when actually there is little understanding. Biemiller (2003) concluded that by third grade, “95 percent of children could read aloud more words than they could understand,” suggesting that vocabulary knowledge and word-identification are two factors that limit reading comprehension (p. 324). Biemiller’s finding is based on a study where he obtained a correlation of .81 between an oral vocabulary test and reading comprehension across grades one through six (Biemiller, 2003). When a written vocabulary test was used, the correlation with reading comprehension increased to .93, and Biemiller concluded that “simple vocabulary knowledge and word identification skills account for almost the entire variance seen in reading comprehension” (p. 325). Further, struggling readers have lower

vocabularies, which may be attributed to limited exposure to print (Rupley & Nichols, 2005).

In a review of research for teaching reading comprehension strategies to students with learning disabilities, researchers found that students successfully learned word meanings while independently reading text, but this process was somewhat inefficient and not especially effective (Gersten, Fuchs, Williams, & Baker, 2001). Examining the relationship between high levels of reading engagement and vocabulary development is crucial when designing instruction. It is hopeful that reading skills, especially comprehension, will increase as a result of higher engagement in reading, but it cannot be assumed that children understand text just because they read often (Gersten et al., 2001).

For children with learning disabilities whose reading and oral vocabulary usage is significantly lower than their peers, vocabulary instruction is critical (MacLean, 2000). Rupley and Nichols (2005) reported that any instructional practice which does not include explicit teacher instruction and opportunities for students to encounter words in meaningful text should be called into question. In his review of research, Biemiller (2003) concluded that “acquisition of vocabulary knowledge is no different than acquiring phonics skills, spelling, and learning math...we ought to do our best to bring each child to adequate levels of vocabulary knowledge” (pp. 332-333). He also noted that many children with reading disabilities have lower vocabularies and strongly encouraged an increase in teacher-directed vocabulary instruction, especially instruction focused on morphological analysis (Biemiller, 2003).

Direct Strategies for Teaching Vocabulary

Specific Word Instruction

Most classroom teachers design vocabulary instruction that addresses the critical language for each content area. In contrast to teaching specific words, teachers implement several vocabulary strategies that have been shown to be somewhat effective. Vocabulary strategies include teaching students how to use a dictionary or glossary to learn the meaning of new words, teaching students to use graphic organizers or semantic mapping to derive word meaning, teaching students how to use context clues to derive word meaning, and teaching students how to use morphological analysis to derive word meaning.

Use of a Dictionary or Glossary

Currently, students are often taught to learn new content vocabulary by locating words in a dictionary or the glossary of a textbook (Joshi, 2005). In reviews of the research (Baumann & Kame'enui, 2004; Joshi, 2005; Stahl & Nagy, 2006) this strategy is cited frequently, but it is not always the most effective, especially for students who are below average in their vocabulary knowledge. This instruction tends to produce a superficial understanding and rapid forgetting of a word (Promoting Vocabulary Development, 2002). Further, errors made by students who wrote sentences based on dictionary definitions of new words is "pedagogically useless" (Promoting Vocabulary Development, 2002, p. 7). If a student does not have a dictionary resource on hand, there is no other aspect of this strategy to help students determine the meaning of an unfamiliar word.

Szymborski (1995) examined whether a context or definition approach would produce the best results on a teacher-made content area vocabulary test where students were asked to match words to definitions. Forty-five fourth-graders were divided randomly into two groups where one group was taught 50 social studies vocabulary words using the dictionary method while the other group was taught using context clues strategies. For the intervention, students using the dictionary method were shown five words with definitions each day for 10 consecutive days and asked to read the words and the definitions orally and discuss the meanings (Szymborski, 1995). Students using the context clues method were shown 5 vocabulary words and their context sentences (Szymborski, 1995). The sentences were also read orally and participants were selected at random to tell the meaning of the target word; participants were not corrected for incorrect responses (Szymborski, 1995).

On the last instructional day, the dictionary method group viewed overhead transparencies containing all 50 words and definitions. The researcher read each word and definition one time and did not allow discussion. The context clues group was also shown all 50 context passages containing the same vocabulary words, and again, no discussion was allowed (Szymborski, 1995). To measure vocabulary knowledge, both groups were required to match the words to the definitions for 25 of the previously taught words. One week later, both groups reviewed all 50 words again and another matching test with the remaining 25 vocabulary words was administered (Szymborski, 1995).

After obtaining the results, the researchers observed no significant difference between the definition and context instruction groups. Overall, participants in the definition group appeared to have more understanding for word meanings and were able

to use the words in a sentence. One reason for this is that the context clues group focused on understanding different context clues strategies rather than focusing on learning the new words. Some of the participants learned the strategies and implemented them quickly while other participants struggled to understand the strategies alone. Because of this, participants in the definition group completed lessons at a faster pace; it took more time for the context clues group to work through the steps (Szymborski, 1995). Further, several different forms of context clues strategies were introduced together, which confused participants and made implementation more difficult (Szymborski, 1995). If repeating the study, it was clear that participants in the context clues group needed to be firm in the context clues strategies in order to implement them during the intervention.

Szymborski (1995) concluded that participants in both groups still needed additional instruction to be able to use context clues when necessary and for when other resources, like a dictionary, are not available. Szymborski also indicated that “children should be given opportunities to use the words in a variety of ways” instead of focusing on one approach to obtain word knowledge, such as just looking the word up in the dictionary (Szymborski, 1995). This still presents a challenge for educators because the level of understanding for students in the same classroom receiving the same instruction will vary due to differences in background knowledge and how well they implement vocabulary strategies.

Bryant, Goodwin, Bryant, and Higgins (2003) reviewed research on vocabulary instruction for students with learning disabilities and stated:

[T]here are different levels of processing word knowledge, including association, comprehension, and generation... [T]he challenge is to identify methods that

effectively teach students with LD how to process and comprehend unknown word meanings. (pp. 117-118)

Bryant and her colleagues pointed out that other methods (dictionary, context clues, etc.) cannot be a student's only strategy for learning unfamiliar words. Rather, definitional and contextual strategies should be combined with explicit instruction for students with learning disabilities (Bryant et al., 2003). Instead of casually teaching students a variety of vocabulary strategies, it is important that they know specific strategies that are consistent among contexts. For students with learning disabilities in the older grades, vocabulary techniques need to focus on ways to improve retention of words at the word-meaning level so this knowledge can transfer to comprehending text.

Pany, Jenkins, and Schreck (1982) conducted three experiments to assess the effects of vocabulary instruction on word knowledge and reading comprehension. The treatments varied but included direct instruction techniques, deriving meaning from context, and synonym practice. Researchers noted that previously little attention was given to study the relationship "between learning word meanings and comprehending reading text containing newly acquired vocabulary" (Pany et al., 1982, p. 202). The first step in the study was to evaluate teaching procedures for improving vocabulary, the second to determine the generality of procedures learned across the learner type, and the third was to evaluate the vocabulary procedures on comprehension of sentences (Pany et al., 1982). Group 1 included "average" fourth-grade readers, and Groups 2 and 3 included students with disabilities and remedial readers.

In Experiment 1, the researchers selected 65 words from fourth-grade texts that were most likely unfamiliar to "average" fourth-grade students. Only words that were

phonetically regular and definable by a one- or two- word synonym were used (Pany et al., 1982). In each treatment condition (Meanings from Context, Meanings Given, Meanings Practiced, and No-Meanings Control), two words and/or sentences were presented to students on an index card. Students were instructed to read silently, then orally, then silently again (Pany et al., 1982).

In Meanings from Context, students read a sentence containing the target word and then a second sentence that contained a synonym of the target word—for example, “Dan is a real buffoon. He is the funniest clown in the circus” (Pany et al., 1982, p. 204).

In Meanings Given, the student read the sentence containing the target word and then the experimenter provided the meaning and a clarifying sentence. After the student read the sentence, “Dan is a real buffoon,” the researcher stated, “Buffoon means clown. Teachers do not like students to behave like buffoons or clowns” (Pany et al., 1982, p. 204).

In the treatment Meanings Practiced, students read a target word in isolation. The researcher then stated a synonym and a sample sentence. Further, the researcher prompted correct responses from the student. Table 1 shows an example of this interaction.

Finally, in the No-Meanings Control, students simply read the target word in isolation from the index card.

There were two measures of vocabulary knowledge and two measures of sentence comprehension in this experiment. First, an Isolated-Word Vocabulary Test showed all the target words in a single column where students were asked to orally read each word and produce a synonym (Pany et al., 1982). The experimenter recorded responses. The

second measure was a Multiple-Choice Vocabulary Test where the 24 target words that students had defined incorrectly on a pretest were followed by four randomly arranged choices—the correct synonym, a synonym of another item, and two where the experimenter read each item twice as students circled one of the choices (Pany et al., 1982). Third, in the Sentences Paraphrase Test, the researcher presented a sentence with the target word and participants were instructed to restate the sentence without using the target word (Pany et al., 1982).

Finally, a 96-item Sentence Anomaly Test was conducted to measure comprehension. Four sentences were created for each target word so that at least one made sense and at least one sentence did not make sense. Students read through the sentences silently and marked a plus (+) if it made sense, a minus (-) if it did not make sense and a zero (0) if they did not know the meaning (Pany et al., 1982).

Table 1

Script for Interaction Practice

Student Reads: “Buffoon.”

Experimenter Says: “Buffoon means clown. Your teacher may become angry if you behave like a buffoon in class. What does buffoon mean?”

Student Says: “Buffoon means clown.”

Experimenter Says: “What does buffoon mean?”

Student Says: “Buffoon means clown.”

(Pany et al., 1982, p. 205)

Experiment 2 followed the same treatments that Group 1 received and was conducted to determine to what extent the strategies would be effective for students with learning disabilities (Pany et al., 1982). The Meanings Practice condition was the most effective for teaching synonyms and exceeded the performances the students gave under the Meanings Given condition, indicating that opportunities to practice may play a crucial role when instructing students with disabilities (Pany et al., 1982). It is interesting to note that the Meanings From Context condition did not produce significant vocabulary learning for the students with learning disabilities. In comparison with Group 1 (“average” fourth graders), the students from Group 2 (students with disabilities) acquired fewer synonyms (Pany et al., 1982).

In designing Experiment 3, data from the prior experiments were used to determine if vocabulary training improves passage comprehension. Students selected for this experiment were those fourth graders who attended a summer school program for children of economically deprived families and had been instructed with programs used for teaching students with learning disabilities during the regular school year (Pany et al., 1982). The previous 24 target words were divided into two 12-word sets—one set as instructional words and the other set as control words for the first group. The second group had the opposite sets of words assigned.

Similar to the previous experiments, all 24 words were printed on index cards. Students were placed in small groups and each received the Synonym Instruction treatment. This was similar to the Practice Condition. The researcher chose three words at a time and held a card up for each student who read the word and synonym individually. Then all students gave the response in unison. The cards were shuffled and

the group practiced until each student could produce the correct synonyms in one trial. Then another three-word subset was implemented and combined with the first three words. This continued until all 12 experimental words were combined.

In the No-Instruction Control treatment, students did not receive instruction and read the target words only.

The same measures from experiments 1 and 2 were used. In addition, 2 stories were written that contained one of the 12-word sets of target words. Five forms of a cloze test were derived for each story and each student was assessed on one of the five forms. Further, a story retell test was given and recorded for later scoring. Following these, a set of ten comprehension questions was orally presented to each student.

Data from experiment 3 showed that, again, synonym practice was highly effective for vocabulary teaching and had a positive transfer to sentence comprehension. Importantly, most of the students learned the twelve new words in less than one hour and could demonstrate their knowledge the next day (Pany et al., 1982). Unfortunately, the results of vocabulary instruction on story comprehension did not indicate a benefit for students when reading a passage.

Overall, the authors indicated that synonym practice was a highly effective, specific word instruction procedure for students with and without disabilities. This practice also increased single-sentence comprehension; however, participants did not benefit from this practice when asked to read a passage. Further, all participants retained vocabulary words better when given adequate practice and learned the least when synonyms were presented in context. It was interesting to note that most direct instruction was provided in the practice section where the participants were most

successful. Pany et al. (1982) suggested that if the purpose is to help students learn new vocabulary, then a direct instruction approach should be considered.

Brainstorming and Graphic Organizers

A vocabulary strategy often used in combination with graphic organizers is “brainstorming,” where the teacher helps students share and discuss ideas that lead to understanding. The use of graphic organizers combined with brainstorming is a common approach teachers use for specific vocabulary instruction in content areas. When brainstorming, teachers let students share what they “think” an unfamiliar word might mean. This provides an opportunity to evaluate students’ background knowledge associated with the new words (Rupley & Nichols, 2005). This practice encourages students to think about words and concepts that are unknown and opens up discussion and discovery in hopes that they will make connections and engage in thinking and reasoning skills.

Graphic organizers vary significantly (webbing, outlines, tables, word games, etc.), but all serve the same purpose—to isolate new words and provide a visual and permanent product for students to write each word and its meaning. Graphic organizers are usually included as supplemental resources in curricula, but often, teachers develop their own graphic organizers to meet their instructional needs.

Smith (2002) conducted a study where students were taught how to use graphic organizers and brainstorming to learn new words. A group of 10, seventh-grade boys with learning disabilities were participants and were divided into three groups. During the study, instruction was alternated over an 8-week period between traditional strategies

(i.e., flashcards, copying definitions, memorizing, etc.) and graphic organizer strategies.

Vocabulary assessments were given to both groups at the end of week.

There were no significant differences in the scores for each group of students with disabilities (Smith, 2002). The group that had the graphic organizer instruction averaged 79.55 on the final assessment, while the group that had traditional instruction averaged 93.15. The group that had both graphic organizer and traditional instruction averaged 85.55 on the final assessment. Overall, Smith (2002) concluded that using graphic organizers are a good option, but not necessary for vocabulary instruction, noting that they do not hinder vocabulary instruction, but do not advance it either. A limitation of the study was that only a small sample of students participated in the study. Further, the concept of graphic organizers was a new concept to grasp and time was limited to only 8 weeks of instruction (Smith, 2002).

Semantic Word Mapping

Semantic word mapping incorporates many vocabulary strategies that include building background knowledge, teacher-student discussions, and visual cues. In semantic word mapping, teachers list information categorically so that students can see relationships between new words, concepts, and information studied previously (Rupley & Nichols, 2005). Bos and Anders (1990) implemented a study that measured the effects of three interactive vocabulary strategies—semantic mapping (SM), semantic feature analysis (SFA), and semantic/syntactic feature analysis (SSFA). The purpose of the study was to compare the effectiveness of the three interactive strategies with the definition instruction (DI) strategy. The definition instruction (DI) consisted of directly teaching the definitions of vocabulary terms, emphasizing oral recitation, correct

pronunciation, and memorization of definitions (Bos & Anders, 1990). The semantic mapping condition (SM) included constructing a relationship map from the vocabulary list. The semantic feature analysis (SFA) and the semantic/syntactic feature analysis (SSFA) conditions were similar because both involved teacher and students predicting and discussing relationships among concepts; the difference was those directly involved in the SSFA condition also predicted answers for sentences. Participants in the study included 61 junior-high students with learning disabilities who were randomly assigned to one of the four intervention conditions.

Participants were first given a prior-knowledge test and a topic interest inventory. After a delay of two weeks, students participated in three 50-minute practice sessions for this strategy. After another two-week delay, three 50-minute experimental sessions were conducted. To measure vocabulary knowledge, students produced written recalls about the word or topic that included what they had read, what they learned during instruction depending on their intervention group, or other background knowledge. Right after completing the test to measure vocabulary knowledge, a multiple-choice test was administered as another measure for vocabulary and comprehension. To measure long-term learning, students repeated this measure four weeks later. Each student received a vocabulary and comprehension score.

The findings from this study were that students in the three interactive instructional conditions (SM, SFA, and SSFA), out-performed those receiving definition instruction for both vocabulary and comprehension (Bos & Anders, 1990). Bos and Anders suggested that interactive or knowledge-based interventions lead to greater comprehension than the dictionary method to memorize pronunciations and definitions.

Further, they concluded that definitional information alone was not sufficient to produce consistent effects on comprehension (Bos & Anders, 1990).

While semantic mapping techniques appear to be effective to teach vocabulary, new words must be taught individually because students do not learn techniques for deriving the meaning of words that are not taught directly. The authors suggested that that interactive, rich vocabulary instruction enhances vocabulary understanding and reading comprehension among students with learning disabilities (Bos & Anders, 1990).

Use of context clues

In a meta-analysis, Stahl and Fairbanks (1986) examined whether vocabulary instruction had a significant impact on children's comprehension of text and examined what types of vocabulary instruction were most effective for students to transfer words meaning to context.

It was concluded in this meta-analysis that vocabulary instruction may have a significant effect on passage comprehension containing taught words (Stahl & Fairbanks, 1986). Researchers also discovered that vocabulary instruction may facilitate growth in reading comprehension by increasing the students' interest in learning new words (Stahl & Fairbanks, 1986). The methods that did produce the highest effects for vocabulary measures and comprehension were a combination of definitional information—knowing the dictionary definition—and contextual knowledge—knowing about a core concept and how that knowledge is realized in different contexts (Stahl & Fairbanks, 1986). Further, keywords methods, such as mnemonic strategies or image strategies, proved to be helpful in achieving comprehension gains (Stahl & Fairbanks, 1986). These findings support the case for educators to teach vocabulary strategies and techniques when addressing reading

instruction, especially for students who are remedial readers or have a learning disability. Students benefit when they have more tools to understand new words and text rather than rereading the sentence and relying on context.

In contrast, Stahl and Fairbanks (1986) noted how “methods that provided only definitional information about each to-be-learned word did not produce a reliable effect on comprehension” (p. 101). In addition, drill-and-practice methods and multiple exposure methods did not produce effects that were reliable in regard to comprehension.

Morphemic Analysis

As the research suggests, vocabulary instruction may have a significant influence on improving word knowledge and reading comprehension, but teaching too many strategies at once may leave students confused or overwhelmed. Taking the time to teach a single, foundational approach for deriving word knowledge may be more efficient, especially for students with disabilities. After students proficiently demonstrate a strategy, other techniques like mapping and image strategies can be used as secondary skill sets for students to access success in reading.

A morphemic approach is a vocabulary instruction approach in which students are taught new words as well as the meaning of word parts that might be used to derive the meaning of novel words. In morphemic instruction students separate the word into small, meaningful parts, or into morphemes, in order to determine possible meaning for the entire word (Stahl & Nagy, 2006). This strategy focuses on teaching students about language and meaningful parts—not just to memorize words and recite definitions. Kuo and Anderson (2006) suggested in their research that teaching morphological awareness contributes to the development of reading comprehension.

Aarnoutse and Tomesen (1998) examined whether instruction on how to derive word meaning from context and through morphological analysis improves students' ability to derive the meaning of unfamiliar words and improves reading comprehension. From eight participating schools, 16 fourth-grade students were selected as participants for the experimental group and 15 fourth-grade students were selected for the control group.

The intervention consisted of the implementation of an instructional program with 45-minute lessons outside the classroom twice a week for 6 weeks. The experimental group learned that particular clues can be used to determine word meaning. The following clues were taught to students: (1) how to create an illustration, (2) how to analyze the word itself (morphological analysis), (3) how to produce a synonym, (4) how to produce an antonym, and (5) looking for clues for the unfamiliar word in the surrounding sentences to come up with a description. The teacher modeled these strategies using a think aloud approach, initiated student discussion, and then gradually let the students take over so they could conduct the strategies independently (Aarnoutse & Tomesen, 1998). Participants in the control schools continued with the reading comprehension instruction already being taught in their schools.

Outcome assessments included a measure of vocabulary meaning, two measures of the student's ability to derive meaning of unfamiliar words, and two measures of reading comprehension. Results from the study indicated that the poor and average readers in the experimental groups and in the control groups improved their vocabulary meaning and their ability to derive meanings for novel words from pretest to posttest. The poor readers in the experimental group improved their ability to derive the meaning

of unfamiliar words significantly more from pretest to posttest than those in the control group, while the average readers from both groups progressed equally from pretest to posttest (Aarnoutse & Tomesen, 1998). There was no effect on general reading comprehension as a result of the intervention. Aarnoutse and Tomesen suggested that training for derivation of word meanings across a more extended period of time with a larger number of participants and for a wider variety of texts might impact general comprehension.

Anglin et al. (1993) conducted an investigation that examined elementary school children's morphological development during the elementary grades. The purpose of the research was to study the growth of recognition vocabulary during early-middle elementary years in relation to the development of morphological knowledge (Anglin et al., 1993). A total of 96 children from two elementary schools in grades 1, 3, and 5 participated in this study. The children were tested on the words by means of definition, sentence, and multiple-choice questions (Anglin et al., 1993).

Children were presented with a list of increasingly difficult words and asked to demonstrate understanding of each word. First, the child was asked, "What does the word ____ mean?" and after the response another prompt, "Can you tell me anything more about what the word ____ means?" was given if the researcher needed more clarification (Anglin et al., 1993, p. 59). If the child expressed sufficient knowledge of the word then the next word in the list was presented. If the child did not define the word correctly then the child was asked to use the word in a sentence to illustrate the meaning. If the child expressed sufficient knowledge of the word then the next word in the list was presented. Finally, if children could not illustrate the word's meaning in a sentence then

they were presented with four alternative meanings and were directed to choose the alternative that they thought was most correct. This process continued until a child missed seven consecutive words on the list. After completing this sequence, each word was presented again and children were asked if they knew what the word meant. Even if an incorrect response was given, the interviewer continued to the next word on the list. When children indicated that they knew what a word meant, they were asked to define the word, illustrate meaning in a sentence, or choose from a list of alternative meanings. The 6-year-olds progressed through an average of 103 words, while the 8-year-olds progressed through an average of 160 words, and the 10-year-olds progressed through an average of 196 words.

Children were given five scores that reflected the number of words responded to correctly of a given type (root words, inflected words, derived words, literal compounds, idioms) (Anglin et al., 1993). In general, Anglin et al. found that comprehension of derived words increased dramatically between grades 1 and 5. The authors also found that the ability to analyze morphological structure increases with age and grade (Anglin et al., 1993). In regard to the importance of morphology, it was determined that lexical development could be viewed in terms of morphological complexity and that it increases with age and grade (Anglin et al., 1993).

White, Power, and White (1989) examined students' understanding of prefixes and suffixes to determine if it might be worthwhile to spend time teaching students in the middle grades to derive word meanings using morphological strategies and to discover how many new words students might be able to understand using their morphological knowledge. The researchers did not implement an intervention for this study and instead

assessed the students' current knowledge to determine the probability that elementary students could derive the meaning of a word.

The participants in this study were two classes of third-grade students and two classes of fourth-grade students from the same private school. For all the students, their vocabulary was average for their grades (White et al., 1989). Students' knowledge of root words was measured using a multiple-choice test where vocabulary items were written for each root. Participants were told to pick the word that best completed the sentence for each item. The measure for students' knowledge of prefixes was a multiple-choice assessment of prefix meanings. The measure for students' knowledge of suffixes was a test with 15 suffixed words in random order. The examiner read each suffixed word aloud and then paused to give students the opportunity to circle the choice from two sample items they thought was the suffix (White et al., 1989). Students' combined morphological ability was estimated using data from all the measures for deriving the meaning of words based on the morphemes.

White et al. found that after fourth grade, students encounter approximately 1,300 analyzable new words per year and that this will double by seventh grade. In addition, the density of these words in text will also double as the amount of reading increases (White et al., 1989). Also supported from their results is that the probability of successful analysis should increase as students learn the meanings of roots and affixes. These resulting estimates support the practice of morphological instruction for students in fourth grade and above based on knowledge of frequently occurring affixes and preparing them to use morphological cues. With morphological strategies in place, White et al. estimated that seventh-grade students may analyze at least 3,000 to 9,000 prefixed words a year.

The researchers also suggested four components that would be most effective in helping students analyze and derive word meaning, one of which includes teaching students the meaning of the four most common prefixes: *un-*, *re-*, *dis-*, and *in-/im-/ir-*. Other components include providing students opportunities to practice unfamiliar words with these prefixes, removing the suffixes *-able/-ible*, *-ly*, and *-ness*, and reviewing the spelling changes associated with adding a suffix to a word.

A Rationale for Investigating Morphemic Instruction

Knowing the possible benefits of different approaches for vocabulary instruction, the purpose of this study is to extend vocabulary research using a morphemic, direct instruction approach with a focus on prefix instruction. The morphological strategy appears to present a strong case for clear, direct instruction, as well as the potential for high levels of generalization for middle level students. Further, analyzable prefixed or suffixed words are more numerous after fourth grade (White et al., 1989). Within the morphological approach, prefixes are the most consistent and predictable morphemes to work with, presenting a consistent structure when designing instruction for middle school students.

CHAPTER III

METHODS

Participants and Setting

One eighth-grade student and five seventh-grade students with learning disabilities participated in this study (see Appendix N for consent form). Three of the six students were female and all were Caucasian. Participants were selected for the study if they qualified for special education services under IDEA in the area of reading. Participants' grade equivalent score on the Woodcock-Johnson III (WJ-III) Reading Vocabulary subtest ranged from 1.9 to 5.0 and on the Passage Comprehension subtest their grade equivalent score ranged from 1.7 to 4.0. On the WJ-III Reading Fluency subtest their scores ranged from 74 to 100 words per minute (wpm). In addition, the participating school district used the curriculum-based assessment in the Accelerated Reader (AR) program to determine present levels of performance for all students. Participants' comprehension scores on the AR program ranged from 1.7 to 5.3 (see Table 2).

Assessment sessions, as well as instructional sessions, were conducted in a resource classroom setting within the junior high school to minimize distractions. The participants, experimenter, and special education teacher were the only individuals present in the room throughout the duration of the study.

Table 2

Reading Scores for each Participant

Participant	WJ-III subtests			Curriculum-based
	Reading vocab	Passage comp	Fluency	Accelerated Reader
Amy	5.0	3.7	100	3.4
Rachel	2.9	2.2	78	3.2
Jessica	1.9	1.9	86	3.0
Todd	3.4	4.0	81	5.3
Ben	2.1	1.9	77	3.1
Thomas	2.1	1.7	74	1.7

Measures

Three measures were used to examine vocabulary knowledge and comprehension. First, the Prefixed Word Assessment was used to measure students' knowledge of known root words when a prefix is added to the word (see Appendix A). Second, the Sentence Comprehension Assessment was used to determine if students could apply the meaning of a prefixed word to the context of a sentence (see Appendix B). Third, a social validity scale was administered at the end of the study to obtain insight for how each student felt about participating.

Prefixed Word Assessment

Data from this test was used to determine if participants understood that adding a prefix alters the meaning of a root word. Each version of the assessment included 16 items. Four prefixed words using known root words were randomly selected for each of four prefixes (i.e., 16 total words). Participants were instructed to write a definition for each prefixed word. Responses were scored correct if participant's definitions included a word that showed understanding of the prefix and a synonym or phrase for the root word (see Table 3 and Appendix A for a complete scoring rubric). Scoring was determined as the percent correct for each prefix.

Table 3

Sample Item for Prefixed Word Assessment

Prefixed Word Assessment

Directions: Write a definition for each word; write what you think each word means.

1. enlarge = _____

Correct Response:

enlarge = make something bigger (student demonstrated knowledge of the prefix
and a synonym for the root word)

Incorrect Responses:

enlarge = make something larger (student used root word in definition)

enlarge = huge (does not address the prefix)

Sentence Comprehension Assessment

The Sentence Comprehension Assessment was a pre- and postintervention measure that was administered individually. Participants first read a sentence aloud with a prefixed word embedded in the text. None of the prefixed words included in the sentence comprehension measure were included on the Prefixed Word Assessment. Mispronounced words were corrected and participants repeated the sentence until it was read fluently. Next, participants read a question that referenced the meaning of the prefixed word and wrote an answer for the prompt. Students were encouraged to answer with a complete sentence.

A pilot study for this measure was conducted in a middle school. Two male and two female seventh grade students were selected at random and administered a draft version of the Sentence Comprehension Assessment. These responses were used to create a scoring rubric and to revise sentences and questions. Based on the student responses during the pilot test, at least three examples of acceptable answers were generated for each question. During the study any participant response that approximated those from the rubric were considered correct (see Table 4 and Appendix C).

Social validity measure

The social validity rating scale consisted of 11 questions that addressed what participants liked and disliked about root word and prefix instruction (e.g., Do you feel like your vocabulary is better since you learned the meanings for root words? and What would you change to make prefix instruction better?) their vocabulary knowledge after instruction, and their overall impressions about what they learned (see Appendix L). A

Table 4

Sample Items for Sentence Comprehension Assessment

Sentence Comprehension Assessment

Sentence: **Jenny needed to buy new clothes due to the subzero conditions.**

Prompt: Tell me about the kind of clothes Jenny should buy.

(Correct Answers: Jenny should buy winter clothes; Jenny should buy warm clothes like a coat, gloves, and boots; Jenny should buy long pants and long-sleeved shirts; student response or answer that approximates these responses.)

paraeducator who was not involved with the study administered the scale verbally to each student individually. The paraeducator asked the questions and wrote down the responses for each student. The paraeducator collected the information to minimize any pressure that students might have felt if the instructor had collected the information.

Independent Variable—Prefix Instruction

The independent variable in this study is the instructional routine that was used to teach the unknown prefix and known root word combination. The purpose of this instructional routine was to teach the definition of a prefix and to teach how adding a prefix alters the meaning of a word.

Participants learned a new prefix using two steps. In step 1, students reviewed ten known root words and their definitions, learned the new prefix and its definition, and were given examples of the new prefix attached to the known root words. To determine

how the prefix alters the definition of the root word participants were taught how to separate a prefixed word into the prefix and the root word. Participants were then taught a definition for the target prefix, asked to provide a synonym for the target root word, and taught how to link the prefix definition to the root word synonym. For each target prefix, participants were guided through three examples to demonstrate how adding a prefix alters the meaning of a root word. Appendix D provides an example of the instructional routine using this strategy for all prefix lessons.

In step 2 participants practiced deriving the meaning of prefixed words. Participants independently wrote definitions for two of the prefixed root words used in initial instruction and three new prefixed words. If students responded correctly to four of five words they were told that they were ready to move ahead. Importantly, participants were not provided specific feedback on their responses.

Procedures

Initially, unknown prefixes and root words were identified. After identifying prefixes and root words, Prefixed Word Assessments were administered to determine if students knew the meaning of any of the prefixed words. Next, unknown root words were taught to students and the Prefixed Word Assessment was administered again to determine if simply teaching students root words improved performance on prefixed words. Finally, students were sequentially taught the meaning for each of the prefixes. The procedures for each condition are described below.

Identify Unknown Prefixes and Select Root Words

To identify unknown prefixes, a prefix survey was developed that included 13 of the 20 most frequent prefixes (Baumann & Kame'enui, 2004). The prefixes included in the survey were those for which an adequate number of root words could be identified and also those that had four or less definitions to use for instruction (see Appendix E). Students were presented the list of prefixes and asked to write the meaning or definition for each prefix (see Appendix F).

Initially, the prefix survey was administered to students at two middle schools. The first middle school was a private school where 16, seventh-grade general and special education students completed the survey. The second middle school was a public school where 11, seventh-grade students with disabilities completed the prefix survey. The percentage of correct responses for each prefix across samples is presented in Appendix G. The unknown prefixes included *en-*, *over-*, *inter-*, *fore-* and *trans-* and the prefixes known by at least one student included *non-*, *mis-*, *sub-*, *super-*, *semi-*, *anti-*, *mid-*, and *under-*. The four most frequently used prefixes (White et al., 1989) of those unknown and those only known by one student included *en-*, *sub-*, *inter-*, and *fore-*. Thus, these prefixes were selected for this study.

For each prefix 15 possible root words were identified to create a vocabulary bank of 60 root words. Two words from each prefix (8 total) were used for the Sentence Comprehension Assessment and the remaining words (52 total) were used for the Prefixed Word Assessment. The root words for each prefix were selected from the *Merriam-Webster's Collegiate Dictionary, 11th Edition, 2005*, *dictionary.com*, the *Microsoft Encarta College Thesaurus*, and *thesaurus.com*.

Baseline

During baseline three different forms of the Prefixed Word Assessment (PWA) were administered to all six participants. Participants were told to do their best and to work independently.

Teaching Unknown Root Words

A Root Word Assessment (RWA) was developed to assess which root words participants knew and which root words were unknown (see Appendix H). One to three synonyms were identified for each root word. These synonyms were used to evaluate participant responses on the RWA and to teach participants the meaning of unknown root words. For example, the synonyms taught for the word *trap* were *catch* and *capture*. The synonyms used for scoring and taught for each root word are listed in Appendix I. An example of the scoring rubric for the root word *marine* is provided in Table 5.

After initially administering the Root Word Assessments, a list of known and unknown root words that correspond to each unknown prefix were identified for each participant. The known root words were set aside and participants were taught all unknown root words. The instructional routine for teaching each unknown root word is presented in Appendix J. Students also practiced root word definitions using flashcards, matching games, and studying root word lists with a partner. After practicing root word definitions, the Root Word Assessment was re-administered. Participants were required to demonstrate knowledge of each root word on two consecutive administrations prior to re-administering the Prefixed Word Assessment. Fourteen sessions were required for students to learn and demonstrate mastery on all 60 root words.

Table 5

Root Word Assessment Example and Scoring Rubric

Directions: Write a word or phrase that means the same thing for each item.

marine = _____

(synonym taught for *marine* = *referring to the sea*)

Prefixed Word Assessment After Root Word Instruction

The Prefixed Word Assessment was readministered to determine if root word training affected participants' understanding of prefixed words. In addition, participants were administered the Sentence Comprehension Assessment.

Prefix Instruction

The purpose of prefix instruction was to teach participants the definition of a prefix and how adding a prefix alters the meaning of a word. Prefix instruction was applied sequentially to each target prefix. At the beginning of each lesson, 10 randomly selected root words and previously learned prefixes were reviewed. Students then learned the definition of the new prefix, practiced defining three prefixed words with the instructor (see Appendix D) and then independently wrote definitions for two prefixed words they practiced with the instructor and three new prefixed words with known root words. Students who wrote 4 of 5 (80%) correct prefixed word definitions independently were then reassessed on the Prefixed Word Assessment. Students who did not correctly write definitions for 80% of the prefixed words used in independent practice were

provided a booster session. In the booster session the lesson on the target prefix was repeated using the same root words taught in the original lessons and students independently completed the practice items. This process was repeated until students responded correctly to 80% of the prefixed words used in independent practice. Only Amy and Thomas required a booster session during the study.

After meeting criteria for independent practice, students were administered a Prefixed Word Assessment. Students were required to write correct definitions for three of four (75%) new prefixed words on two consecutive daily sessions to move forward in the study.

After participants received instruction on all four prefixes, the Sentence Comprehension Assessment was re-administered to determine if students had improved their ability to derive the meaning of a prefixed word when used in a sentence.

Experimental Design

The experimental design for this study was a multiple baseline design across participant pairs and prefixes. For prefix instruction, students were divided into 3 pairs. Pairings were determined based on students' test scores and on instructor judgment after observing how quickly students learned the root word definitions. Pair 1 was Amy and Rachel; Pair 2 was Jessica and Todd; Pair 3 was Ben and Thomas. Four prefixes were taught. Pair 1 was initially taught the prefix *en-*. After meeting criteria Pair 2 was given the same instruction on *en-*. After the second pair met criteria, Pair 3 was taught *en-*. This process was repeated sequentially for the remaining prefixes *sub-*, *inter-*, and *fore-*.

Interobserver Agreement

A second observer independently scored 25% of the Prefixed Word Assessments throughout the study. The assessments scored by both the researcher and second observer were compared on an item-by-item basis. A reliability index score was calculated by dividing the items scored the same by both scorers by the total number of items and multiplying by 100. The mean reliability score across Prefixed Word Assessments was 97% with a range of 88-100%.

A second observer also independently scored 25% of the pre- and post- Sentence Comprehension Assessments. The assessments scored by both observers were compared on an item-by-item basis. The reliability index score was calculated by dividing items scored the same by both scorers by the total number of items and multiplying by 100. The mean reliability score for the Sentence Comprehension Assessments was 100%.

Fidelity of implementation

A checklist that includes each step of the teaching procedure was used to evaluate fidelity of instruction during prefix training (see Appendix M). The special education teacher randomly observed a lesson once a week and completed the checklist. The mean fidelity score was 100%.

CHAPTER IV

RESULTS

The research questions addressed in this study were (1) to what extent does morphemic prefix instruction increase the number of correct responses on a prefixed word assessment for middle school students with learning disabilities? and (2) given an increase in correct responding on the prefixed word assessment as a result of morphemic prefix instruction, to what extent do middle school students with learning disabilities increase the percentage of correct responses to questions on a sentence comprehension assessment?

Participants' Performance on the Prefixed Word Assessment

Participants' performance on the Prefixed Word Assessment is presented in Figures 1 to 3. During the baseline condition, Amy and Rachel responded correctly to only one prefixed word. Overall, they provided incorrect definitions for between one and six prefixed words on each assessment. No responses were provided for the remaining words. The most common error was to ignore the prefix and define the root word or to use the root word in their definition. Following root word training, Amy and Rachel were reassessed on the Prefixed Word Assessment to determine if simply learning the root words would improve their performance. Rachel responded correctly to the same word that she responded correctly to in the baseline condition. Amy did not respond correctly to any prefixed words after root word instruction. However, both participants provided answers for more words than during the initial baseline condition. The most

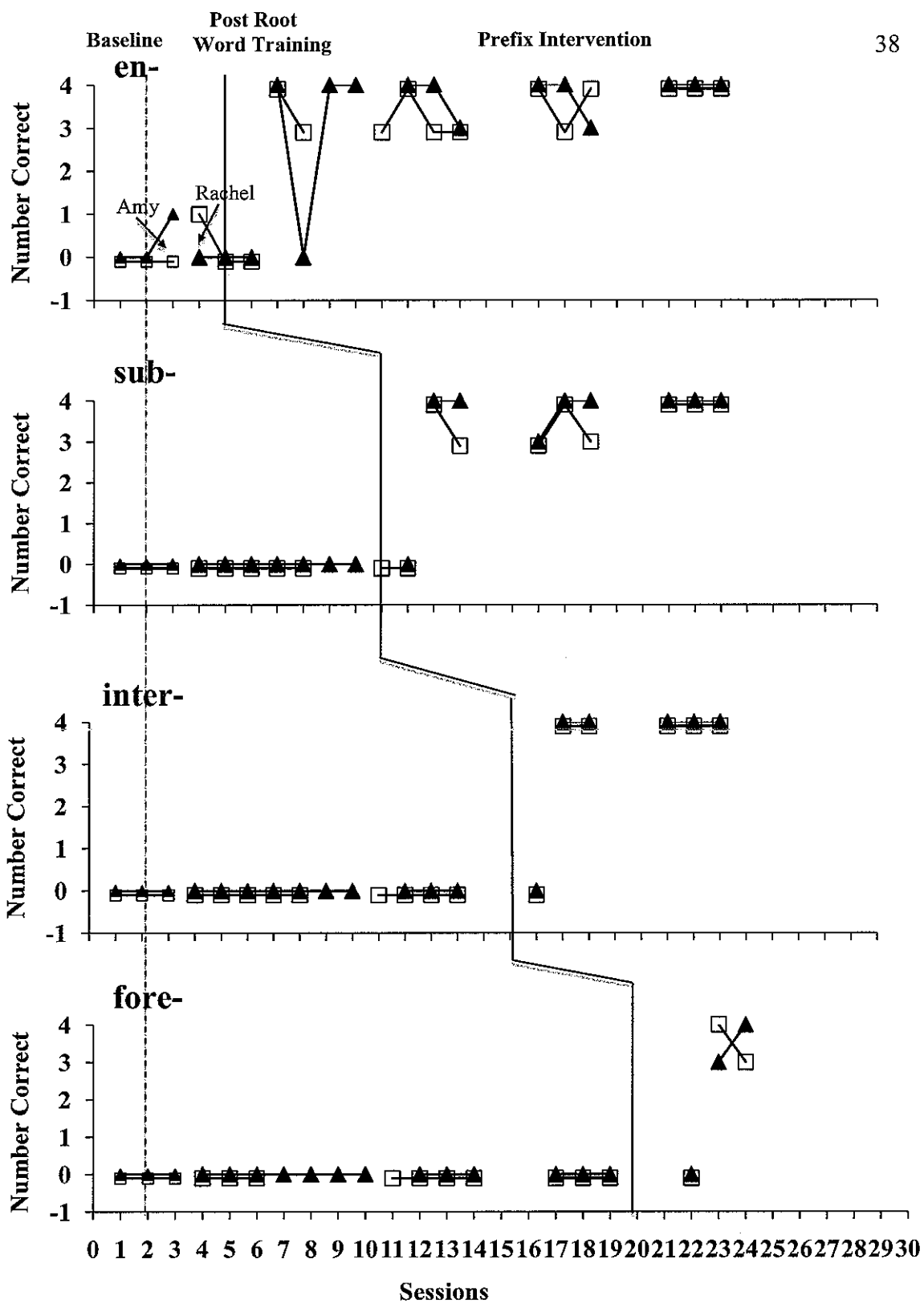


Figure 1. Student performance of prefixed word assessment: Amy & Rachel.

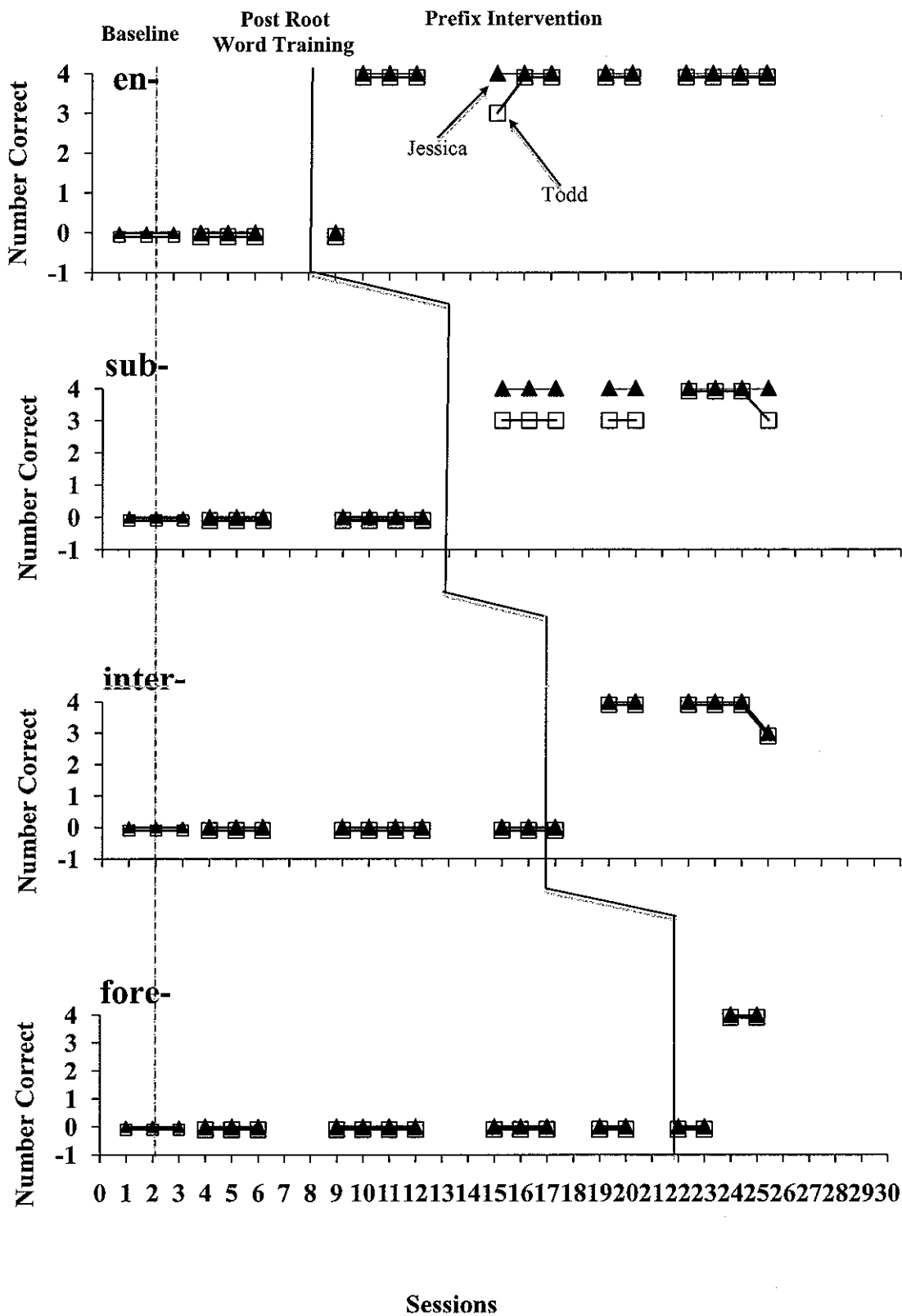


Figure 2. Student performance of prefixed word assessment: Jessica & Todd.

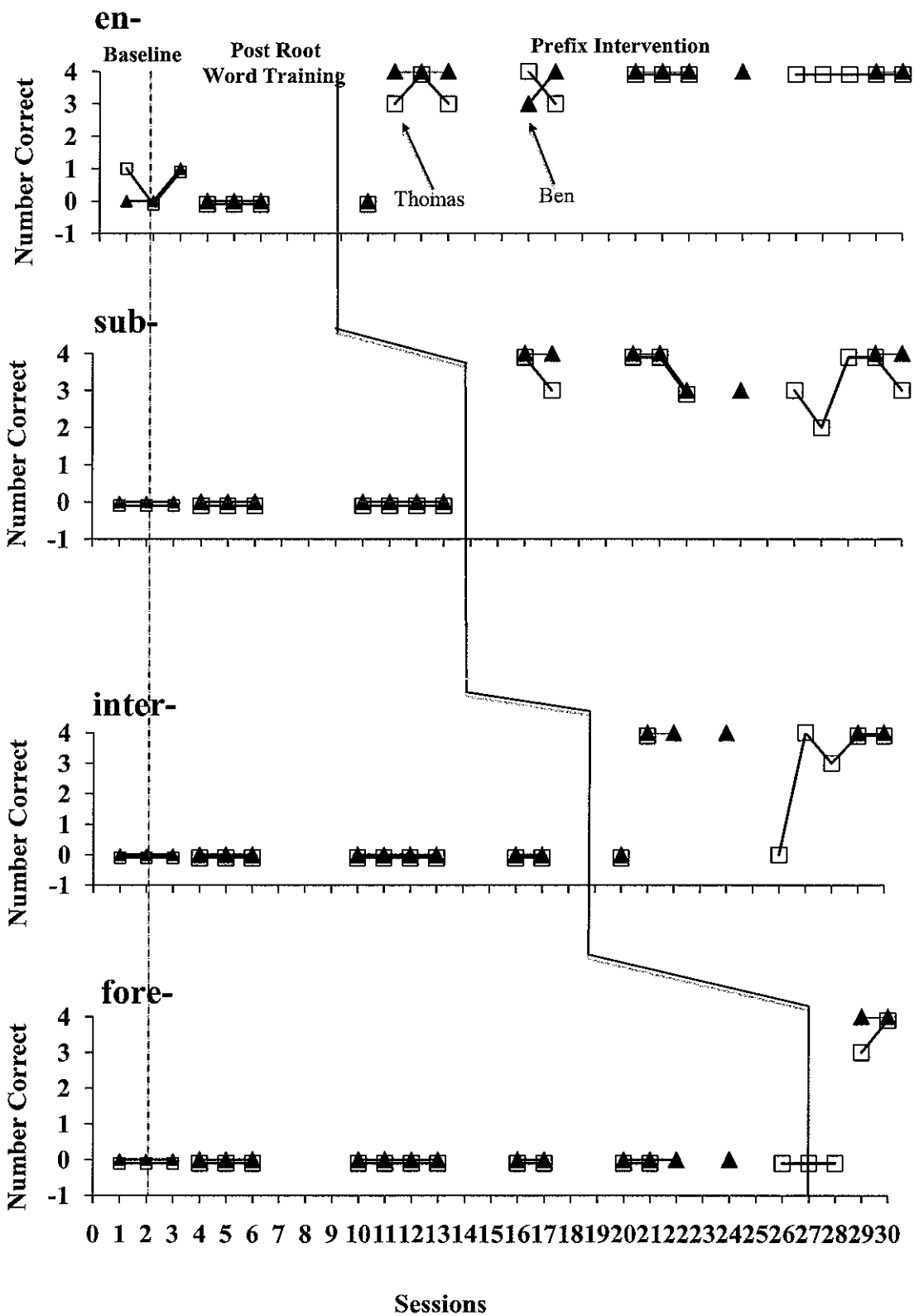


Figure 3. Student performance of prefixed word assessment: Ben & Thomas.

common error was to ignore the prefix and to provide a correct synonym for the root word. Following prefix instruction on *en-*, Amy and Rachel responded correctly to all *en-* prefixed words on the Prefixed Word Assessment; however, their performance on *sub-*, *inter-*, and *fore-* remained at zero. It is interesting to note that Amy correctly responded to the prefixed words for *en-* and continued to provide root word synonyms for the unknown prefixed words. In contrast, Rachel attempted the prefixed words for *en-* only and did not provide a definition for any additional words on the assessment. On the second Prefixed Word Assessment following instruction on *en-*, Amy did not respond correctly to any of the prefixed *en-* words. Amy was then re-administered the lesson on *en-*. On her next Prefixed Word Assessment, she responded correctly to all of the prefixed words beginning with *en-*. Amy and Rachel were then taught *sub-*, *inter-*, and *fore-* sequentially. Following instruction on each prefix, Amy and Rachel responded correctly to either three of four or all of the words for the target prefix on each Prefixed Word Assessment. As students learned each new prefix, they continued to respond correctly to words that included prefixes that were taught previously. On each Prefixed Word Assessment, Amy attempted every item until the end of the study while Rachel would only attempt items for the taught prefixes. Further, Amy started attempting definitions for both taught and untaught prefixed words on session 19 until the end of the study.

During the baseline condition, Jessica and Todd did not respond correctly to any prefixed words. Their most common error was to use the root word in their definition. Like Amy and Rachel, Jessica and Todd were reassessed on the Prefixed Word Assessment following root word training to determine if simply learning the root words

would improve their performance. Both Jessica and Todd's scores remained at baseline levels. Similar to Amy and Rachel, Jessica and Todd provided answers for more words after root word training than during initial baseline, but neither student responded correctly to any prefixed words. The most common errors were copying the root word and ignoring the prefix and providing a correct synonym for the root word. Following prefix instruction on *en-*, Jessica and Todd responded correctly to all *en-* prefixed words on the Prefixed Word Assessment; however, their performance on *sub-*, *inter*, and *fore-* remained at zero. Similar to Amy, Jessica responded correctly to the prefixed words for taught prefixes and continued to provide root word synonyms for the unknown prefixed words throughout the study. Similar to Rachel, Todd only attempted the prefixed words for taught prefixes. Following training each student met criteria for the target prefix by responding correctly to either three or four or all the words on the Prefixed Word Assessments. Jessica's performance remained the most consistent, as she maintained scores of 4 out of 4 for each prefix, with one score of 3 out of 4. She also started attempting definitions for taught and untaught prefixed words starting on session 20. Neither Jessica nor Todd required a booster session for any of the prefixes.

During the baseline condition, Ben and Thomas responded correctly to two prefixed words, *enlarge* and *enjoy*, and they responded incorrectly to all of the other prefixed words. Their most common error was to copy the root word and to use the root word in their definition, similar to the previous students. To determine if learning the root words would improve their performance, Ben and Thomas were reassessed on the Prefixed Word Assessment following root word training. For both students, all post root word training scores remained at baseline levels except those for the prefix *en-*.

Interestingly, the words that were responded to correctly in baseline (*enlarge* and *enjoy*), were not responded to correctly after root word training. Similar to previous participants, Ben and Thomas provided answers for more words after root word training than during the initial baseline. The most common errors were using the root word in the definition, ignoring the prefix and providing a correct synonym for the root word, and simply copying the root word. Following prefix instruction on *en-*, Ben and Thomas responded correctly to all *en-* prefixed words on the Prefixed Word Assessment while their performance on *sub-*, *inter-*, and *fore-* remained at zero. Similar to Rachel and Todd, Ben and Thomas only attempted a definition for taught prefixes until session 26. On the last five assessments, Ben started attempting definitions for taught and untaught prefixed words. Following instruction on *inter-* (session 24), Thomas was absent for several days. After he returned he responded incorrectly to all words with the prefix *inter-*. The lesson on *inter-* was then re-administered and Thomas made only one error on words with the prefix *inter-* for the remainder of the study, but his score for the prefix *sub-* decreased to 2 out of 4 correct words (session 27). On session 28, Thomas' performance on *sub-* improved; otherwise, all the scores for taught prefixes were maintained throughout the study.

Participants' Performance on the Sentence Comprehension Assessment

In the Sentence Comprehension Assessment a prefixed word was embedded in a sentence and participants responded to a question that referenced the meaning of the prefixed word. During the initial baseline and again after completing instruction for all prefixes, all participants took the Sentence Comprehension Assessment. The scoring

rubric for the Sentence Comprehension Assessment is presented in Appendix K.

Participants' performance on the Sentence Comprehension Assessment is presented in Table 6.

On the posttest four of six participants improved their performance. Rachel's performance decreased and Todd's overall posttest score was the same as his pretest score. On the pretest, participants simply attempted to answer the questions based on the information in the sentence but on the posttest, some students restated the question prompt and wrote literal definitions for the prefixed word. For example, after Amy learned the meaning of the prefix *sub-* (under, below) and a definition for the word *zero* (nothing), her response to the direction, "Tell me about the kind of clothes Jenny should buy" was "She should buy under nothing clothes" (see Appendix K). Rachel and Jessica

Table 6

Sentence Comprehension Assessment Scores for Each Participant (correct items)

<u>Participant</u>	<u>Pretest</u>	<u>Posttest</u>
Amy	25% (2/8)	50% (4/8)
Rachel	50% (4/8)	13% (1/8)
Jessica	13% (1/8)	25% (2/8)
Todd	50% (4/8)	50% (4/8)
Ben	50% (4/8)	75% (6/8)
Thomas	25% (2/8)	38% (3/8)

responded to items similar to Amy—restating the prompt and adding the definition of the prefixed word. Another incorrect strategy students used to respond to questions was to use the information from the question and target word in their answer. For example, Jessica stated that “She wants to buy clothes [for] subzero conditions” when asked “Tell me about the kind of clothes Jenny should buy.” While Jessica correctly used part of the question in her answer, she did not understand how she was to respond. A correct response would be, “She needs to buy a heavy coat and pants.”

Social Validity Data

After all assessments were administered, students completed a Social Validity Rating Scale (see Appendix L). Four of six students responded positively when asked if they liked learning root words and all the students indicated that they felt they improved their vocabulary. For reading independently, five of six students responded that they can identify root words more easily, but only half of the students felt they could identify prefixes more easily. Most students responded that they liked playing words games during instruction, but did not like having to read and respond out loud, the amount of writing, and how long the lessons took. For suggestions to make the instruction better, responses included that more practice should be provided, the lessons should be shorter, and students should not have to read so much. All students felt they knew more about vocabulary after instruction and five of six were interested in learning more prefixes. Further, all students claimed to feel smarter after learning prefixes and felt they were better readers.

Instructional Efficiency

Efficient instructional methods are those that produce more learning than what is taught directly (West, 2003). Prior to prefix instruction, all students were directly taught definitions for 60 new root words. Further, all students were directly taught 12 prefixed words during instruction (three words for each prefix) and eight words were used in the pre- and post- Sentence Comprehension Assessment. Thus, 72 words were directly taught during this study and students had the opportunity to write definitions for 40 new words on the Prefixed Word Assessment.

Participants responded correctly to a mean of 38 of the new prefixed words (range = 37 to 39). For approximately every two words directly taught, students learned one additional word using the knowledge gained from root word and prefix instruction.

CHAPTER V

DISCUSSION

Students become more vulnerable to difficulties with reading due to the higher reading demands involved in the curriculum in the upper-elementary grades, especially those children with vocabulary weaknesses (Baker et al., 1995). Although educators strive to help students strengthen their vocabulary and reading skills using traditional, naturalistic, and direct strategies, a single method of effective vocabulary instruction has not been identified (National Reading Panel, 2000). Students with learning disabilities often receive the most instruction on decoding and fluency, leaving word knowledge and reading comprehension gains at a minimum.

One method for increasing vocabulary that may impact reading comprehension is to implement morphemic vocabulary instruction. The purpose of this research was to investigate the effects of morphemic prefix instruction on acquiring word knowledge and improving reading comprehension for middle school students with learning disabilities.

Student Outcomes

Students' responses on the prefixed word assessment improved following prefix instruction. With the exception of only two booster sessions, all participants demonstrated mastery after one lesson for each target prefix. In addition to accurately providing a definition for prefixed words, students learned to separate words into prefixes and root words. Overall, students went from being overwhelmed with the prefixed word assessment and feeling that the words were "too hard" to confidently approaching the

task by dividing words into the component parts and deriving a definition for the target word.

An important aspect of this study was to provide efficient instruction to help students acquire strategies for learning new vocabulary without direct teaching. Root word instruction was a crucial aspect of the intervention. On the Prefixed Word Assessment following root word instruction, most students recognized the root word when presented prefixed words and responded with the meaning of the root word. Rachel, however, remarked that all the words were new suggesting that she focused on the prefix at the beginning of each word and did not recognize the embedded root word. Thus, for Rachel, it was probably critical that one component of instruction was separating words into the prefix and root word and linking the meaning of the prefix to the meaning of the root word, while for other students this instructional component might not be critical. For example, Amy immediately recognized the root words within the prefixed words and accurately produced the root word definitions. This pattern suggests that it is possible that Amy might not have required the instructional module on breaking up words. This also illustrates the range of skills that middle school students with learning disabilities may bring to the new instructional situations. While a student's overall reading or vocabulary level provides information on what they know, it is not particularly helpful for detecting what vocabulary strategies they know how to use, nor does it provide a sufficient level of detail to understand what word analysis skills students can apply because it only addresses their word knowledge. As a whole, root word training combined with breaking words into parts and linking the prefix meaning to the

root word meaning resulted in few errors during prefix instruction and all students readily applied their skill to new words after learning the prefix meaning.

All participants moved through the study at a similar pace with few exceptions. Amy required a booster session after the first lesson. This might be because she was not familiar with the instructional format and did not have enough practice in the early prefix instructional phases. It is important to note that after the one-on-one booster session, Amy was a strong participant and approached the lessons and assessments confidently.

In contrast to Amy, variability in Todd's performance might have been a result of behavior problems. Todd demonstrated difficulty staying focused and required continuous redirecting prompts during lessons. He also appeared bothered because he was paired with a girl, and as such, he was motivated to respond correctly so he could get to the end of the instructional session.

Variability in Thomas' performance was probably due to his frequent absence. Evidence of this is the booster session he required toward the end of the study because he did not remember the material after being absent for nearly a week.

Outcomes from the Sentence Comprehension Assessment (SCA) indicate that although prefix instruction was effective, an additional instructional routine is needed to help students connect the meaning of the isolated word to the context of a sentence. Part of the purpose for the SCA measure of this study was to determine if students could transfer their new vocabulary skills to context. While four of six participants improved their scores on the sentence comprehension assessment, the improvements were marginal for three of the four participants. Only Ben demonstrated the strongest connection for defining a prefixed word and deriving meaning in context. This result suggests a new

instructional routine should be added to help students apply morphemic vocabulary skills when they read independently.

The results from this study are also consistent with comments of the National Reading Panel that “it has been difficult to demonstrate that teaching vocabulary improves reading ability” (National Reading Panel, 2000). In this study, students demonstrated an understanding of words, but they did not consistently apply the meaning of the prefixed words to the context in the sentence. Of the four participants who improved their performance, Ben’s grade equivalent vocabulary and comprehension scores were just below second grade, yet he demonstrated better sentence comprehension than Jessica who had similar grade equivalent vocabulary and comprehension scores. Thus, it is not clear how useful the standardized measure of vocabulary and comprehension collected at the beginning of this study are for predicting students’ performance following the morphemic instruction.

While improvements in sentence comprehension were minimal, all students reported after the study that they felt like they were better readers and they appeared to improve their self-confidence. Other anecdotal observations that also support the conclusion that students generally increased their self-confidence include: completing prefixed words assessments efficiently and quickly, firm and quick correct responses during lessons, and volunteering to answer questions. In essence, study participants learned how to engage in a systematic, logical approach for analyzing words that results in increased positive momentum. This supports MacLean’s (2000) and Stahl and Fairbanks’ (1986) suggestions that vocabulary instruction could have a positive impact on students with learning disabilities because it provides the potential for them to become

more confident readers. In her vocabulary research, MacLean (2000) determined that participants with low reading abilities showed evidence of increased fluency and comprehension and appeared to have greater motivation and engagement for reading the text after engaging in quality vocabulary instruction.

Stahl and Fairbanks (1986), in their meta-analysis of research, examined the effects of vocabulary instruction on learning word meanings and increasing reading comprehension. Though they determined that the transfer of vocabulary instruction produces only slight gains in reading comprehension, they also concluded that vocabulary instruction may facilitate growth in reading comprehension by increasing the students' interest in learning new words (Stahl & Fairbanks, 1986).

Aarnoutse and Tomesen (1998) examined if morphological analysis improves students' ability to derive meaning of unfamiliar words and improve reading comprehension. Similar to the current study, all readers in Aarnoutse and Tomesen's (1998) study improved their ability to derive meanings for new words, and there was no effect on general reading comprehension as a result of the intervention. Further, the results of this study share similarities with Pany et al.'s (1982) tri-experiment study in which the results of vocabulary instruction did not benefit students when reading a passage, even after students demonstrated strong word definition outcomes on the vocabulary words. In Pany and colleagues' (1982) research, participants were asked to produce a synonym for each word. Similarly, the approach to teaching new root words in this study was to have students produce a synonym. Pany et al. (1982) reported that students demonstrated the strongest comprehension for the sentences that included words for which students were taught synonyms, indicating that direct transfer from synonym

acquisition to sentence comprehension proved to be effective; however, the transfer from synonym acquisition to a passage was not effective. In this study, teaching synonyms was an effective way for participants to learn root words and apply the definitions to prefix instruction.

Previous research on morphographic instruction did not specifically address instructional efficiency. In this study, however, only 12 prefixed words were taught directly to the participants, yet all participants successfully derived meanings for prefixed words that were not directly taught. This implies that teaching students how to analyze prefixed words (i.e., breaking a prefixed word into parts and combining the meaning of the prefix to the meaning of the root word) may benefit students more than simply directly teaching them the meaning of all the prefixed words.

Limitations

The attempt to measure a student's vocabulary is a daunting task because every student enters the classroom with varying language experiences. Regardless, the findings of this study support that applying direct vocabulary strategies is an effective approach for working with students with learning disabilities. Still, in a morphemic approach, generalization is constrained by students' knowledge of morphemes and root meanings. Student's knowledge of morphemes includes their understanding of prefixes and suffixes. Moreover, in multi-morphemic words, word meaning and contextual understanding is not necessarily derived by simply combining the meaning of individual morphographs (White et al., 1989).

In addition to the overall limitations of a morphemic vocabulary approach, several limitations surfaced as a result of this study. One limitation was the number of prefixed word assessments students completed during the study. Students averaged 18 prefixed word assessments each throughout the study. As the study progressed, the testing process might have become tedious and it appeared that students simply wanted to get the task done and move ahead. Students might have learned that they simply needed to demonstrate what had previously been taught on each measure. There was no benefit to respond correctly or to even attempt prefixes that were not previously taught. In the future, researchers should consider adding a contingency where students get a preferred reinforcer for responding to untrained prefixes.

Another limitation is the Sentence Comprehension Assessment. Constructing sentences in which a correct response is dependent on understanding the meaning of one word in context is quite difficult. It is possible that some of the sentences used in the assessment were poorly designed. In addition, the students were required to provide written responses, yet all participants had limited written language skills. It is possible that students might respond differently if they were allowed to respond to the questions verbally.

Finally, it is unclear if students will maintain and transfer their word analysis skills with other teachers, or apply their skills in other content areas. In this study, students did not generally improve their comprehension, suggesting that they will not transfer their word analysis skills.

Future Research

Teaching students language skills through vocabulary instruction remains an important issue for educators. Even though it is challenging to measure the effects of implementing morphemic vocabulary strategies, there are potential gains in reading performance given well-designed instruction. Thus, more research is needed to continue examining morphemic strategies and how they relate to word knowledge and reading comprehension. As White et al. (1989) suggested there is not enough “evidence that would permit even a rough guess as to how much vocabulary growth could be expected from morphological training” (p. 285).

This study produced evidence that direct instructional routines for producing the general ability to link the meaning of a prefix to a root words are effective, but there was only minimal transfer to sentence comprehension. More research is necessary that focuses on why the transfer to comprehension is minimal and to determine what additional instruction is required for students to fit their understanding of new words into context.

One approach may be to add an instructional routine in which the teacher models linking the derived meaning of the prefixed word to the context of the sentence. For example, the teacher might first ask students to generate a range of answers in response to a question about some text. The teacher might then demonstrate how the potential responses could be narrowed by applying the meaning of the identified vocabulary word. If a student was presented with the sentence, “Jenny needs to buy new clothes due to the subzero conditions” and asked, “What kind of clothes does Jenny need to buy?” the teacher might first ask students to generate possible answers regarding the types of

clothes Jenny might buy. Next the teacher might ask students the meaning of “subzero” (below a freezing temperature; below nothing), and finally ask students to select which type of clothes would be most appropriate for subzero conditions. This routine might be integrated into the instruction used to teach students how to link prefix meaning to root word meaning.

A second area of research addresses how to produce independent responding across prefixes. This would increase instructional efficiency. Students in this study learned how to break words into the prefix and the root word. If teachers wanted to foster increased student independence, they might teach how to look up the definitions for new prefixes in a dictionary before instruction was delivered on untrained words. This would generate additional instructional efficiency because students could acquire information about new prefixes without any instruction. None of the students in this study demonstrated that initiative and we did not examine whether students had the dictionary skills needed (i.e., locate the prefix in the dictionary and extract the meaning) to acquire new vocabulary independently. To produce these effects in future research, teachers may consider modeling how to look up the meaning of the target prefix in the dictionary before each new lesson. This may lead students to independently look up the definitions for the untaught prefixes.

Efficient approaches to vocabulary development are difficult to identify because they are dependent on reading volume and language skills, both of which are generally deficient in students with learning disabilities (Biemiller, 2003; Bos & Anders, 1990; Bryant et al., 2003; Gersten et al., 2001; Joshi, 2005; Rupley & Nichols, 2005). The current research is but one step toward understanding how morphemic instruction could

be used to build an efficient generic approach to vocabulary development for students with learning disabilities.

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APPENDICES

Appendix A

Prefixed Word Assessment Example and Scoring Rubric

Prefixed Word Assessment

Name _____

Directions: Write a definition for each word; write what you think each word means.

1. international = _____
2. foreman = _____
3. subsoil = _____
4. forejudge = _____
5. enrich = _____
6. subtotal = _____
7. enlarge = _____
8. intercosmic = _____
9. subconscious = _____
10. forebode = _____
11. interact = _____
12. encode = _____
13. enslave = _____
14. submarine = _____
15. intermingle = _____
16. foretell = _____

Prefixed Word Assessment Scoring Rubric

Rule #1:

THE STUDENT NEEDS TO USE A SYNONYM OR PHRASE FOR THE ROOT WORD.

INCORRECT response samples:

1. incorrect because student used the root word in the explanation

enlarge: make something larger

subtotal: the total that comes before the final total

interfaith: among faith

foreman: a man that goes in front

2. correct responses because student gave a synonym for the root word or made a relevant link in the response

enlarge: make something bigger (bigger is the synonym)

subtotal: not the final amount ("final amount" is
the relevant link)

interconnect: parts that join together (join = synonym)

foreman: the guy that goes in front ("the guy that is in front"
or "the male that is in the lead"--relevant link & synonym used)

Rule #2:

THE RESPONSE NEEDS TO SHOW AN UNDERSTANDING OF THE PREFIX.

INCORRECT response samples:

1. incorrect because the response is inaccurate OR response shows knowledge of the root word ONLY

enlarge: larger; bigger; huge (does not address the prefix)

subtotal: final amount (inaccurate response; only gave synonym)

interfaith: what you believe (inaccurate response)

foreman: a person or a guy (does not address prefix)

2. correct responses because demonstrated knowledge of the prefix

enlarge: make something bigger ("make" = meaning of *en-*)

subtotal: almost the final amount ("almost" = meaning of *sub-*)

interfaith: between religions ("between" = meaning of *inter*)

foreman: the guy in front ("front" = meaning of *fore-*)

Appendix B
Sentence Comprehension Assessment

Sentence Comprehension Assessment Items

1. Jenny needed to buy new clothes due to the subzero conditions.
2. The attendance rules at Lisa's new school were not enforced.
3. Mrs. Smith is the foremost advisor on rocket science.
4. Sally loved to intermingle when she left the house.
5. Steven enchanted Melinda.
6. The quality of Joe's work was substandard.
7. Brad was in the intercultural music group.
8. Tony often forgoes skateboarding for tennis on the weekend.

Sentence Comprehension Assessment: Student Response Sheet

NAME: _____

1. Tell me about the kind of clothes Jenny should buy.

2. What is something Lisa could have done?

3. What can you tell me about what Mrs. Smith knew about rocket science?

4. Tell me what Sally loved to do.

5. What happened between Steven and Melinda?

6. If Joe was a painter, tell me about his work.

7. What kind of music did Brad like?

8. What does Tony do on the weekend?

Appendix C

Pilot Results for Sentence Comprehension Assessment

1. **Jenny needed to buy new clothes due to the subzero temperatures.**
2. **The attendance rules at Lisa's new school were not enforced.**
3. **The program featured Mrs. Smith, the foremost speaker on applying for college.**
4. **Sally loved to intermingle when she went out in public.**
5. **Steve told his secretary he was going to entrust her with some information.**
6. **The quality of Joe's work was substandard.**
7. **Beth was an intermediate swimmer.**
8. **Billy decided to forego the golf tournament on Wednesday.**

Pilot Results for Sentence Comprehension Assessment

Prefixed Word Knowledge: Results

(given before reading the sentence and the reading comprehension prompt)

Teacher: (Tell me what the word _____ means...")

Student Responses

subzero: correct 3 of 4 trials
 enforced: correct 2 of 4 trials
 foremost: correct 1 of 4 trials
 intermingle: correct 3 of 4 trials
 entrust: correct 1 of 4 trials
 substandard: correct 1 of 4 trials
 intermediate: correct 2 of 4 trials
 forego: correct 1 of 4 trials

	Word Knowledge Correct	Correct Words
Student 1: 7 th grade female [J.C.]	2 of 8	intermingle, intermediate
Student 2: 7 th grade female [J.W.]	5 of 8	subzero, enforced, intermingle, entrust, forego
Student 3: 7 th grade male [H.C.]	4 of 8	subzero, enforced, intermingle, substandard
Student 4: 7 th grade male [P.S.]	3 of 8	subzero, foremost, intermediate

* Among the 4 students, each word was answered correctly at least once.

Reading Comprehension Questions: Results

(Use the word in a sentence and ask comprehension question)

Student 1: 7th grade female [J.C.]

prefixed word	prefixed word correct? yes/no	sentence comprehension question correct? yes/no	student answer to question prompt	clue that aided student in providing a correct response
subzero	no	yes	"warm"	the word "temperature"
enforced	no	no	"something that wasn't a rule"	-----
foremost	no	no	"was she new?" "I have no idea"	-----
intermingle	yes	yes	"mingle, intermingle, get together with friends"	-----
entrust	no	yes	she was trustworthy	"he told her information" "the word trust"
substandard	no	no	"um...it was a normal job—it wasn't something crazy"	-----
intermediate	yes	yes	"half and half" "she already knew jr. stuff but not senior stuff"	-----
forego	no	yes	"sounds like he skipped or missed out on it; decided not to go"	the word "decided"

Student 2: 7th grade female [J.W.]

prefixed word	prefixed word correct? yes/no	sentence comprehension question correct? yes/no	student answer to question prompt	clue that aided student in providing a correct response
subzero	yes	yes	"coats, long pants, long-sleeved shirts, jackets..."	-----
enforced	yes	yes	"gone to lunch...sluffed, stayed home, not go to school"	-----
foremost	no	yes	"she knew about it; she's familiar with it, had experience"	she was the speaker
intermingle	yes	yes	"talk to people, interact with them, be around them"	-----
entrust	yes	yes	"that he could trust her"	-----
substandard	no	no	"it could be...not too difficult"	-----
intermediate	no	yes	"average"	because it's in the middle
forego	yes	yes	"there was a gold tournament, his activities are on Wednesdays, I think forego means he decided not to go"	the word "decided"

Student 3: 7th grade male [H.S.]

prefixed word	prefixed word correct? yes/no	sentence comprehension question correct? yes/no	student answer to question prompt	clue that aided student in providing a correct response
subzero	yes	yes	"warm clothes"	-----
enforced	yes	no	"she could have, I guess, um, made some kind of petition to get them enforced"	-----
foremost	no	no	"she would have to be a good speaker"	-----
intermingle	yes	yes	"loved to talk with other people"	-----
entrust	no	yes	"he could trust her and yeah..."	"just the way it was used in the sentence"
substandard	yes	no	"it wasn't standard, like it was maybe not that much fun"	-----
intermediate	no	no	"good. she would be good, a competitive swimmer, around a first-class swimmer"	-----
forego	no	yes	"that he wasn't going to go to them...to his activities"	"just the way it was put in the sentence"

Student 4: 7th grade male [P.S.]

prefixed word	prefixed word correct? yes/no	sentence comprehension question correct? yes/no	student answer to question prompt	clue that aided student in providing a correct response
subzero	yes	yes	"winter clothes, wool, something waterproof, rubber boots, thick gloves"	-----
enforced	no	no	"followed the rules"	-----
foremost	yes	yes	"a lot; she knows the most"	-----
intermingle	no	no	"intermingle—mess around"	-----
entrust	no	yes	"that she was responsible and could take care of a matter"	the word "information" and the way it was used in the sentence
substandard	no	no	"it was good"	-----
intermediate	yes	yes	"she'd get, like, pretty good...kind of fast, kind of slow, like 2 nd place"	-----
forego	no	no	"that he was going to move the golf tournament to a different day"	-----

Appendix D

Prefix Instruction: Lessons for Intervention

Introduction Lesson:

Teacher: We're going to be looking at how you can use prefixes to help you figure out

the meaning of words you don't know. Sometimes in your reading you come to a word you don't know. Remember, figuring out the meaning of words you don't know in a passage is an important step in understanding what you read.

You probably already know some ways to help you understand a word you don't know. How do you find out the meaning of a word you don't know?

Student(s): (Responses may vary) (Some answers may include: look word up in a dictionary, reread the sentence, ask someone, etc.)

Teacher: We are going to be looking at how you can use *prefixes* to help you figure out the meaning of words you don't know. Raise your hand if you've heard of prefixes before (wait for response). Share what you know about prefixes.

Student(s): (Responses may vary)

Teacher: Learning some common prefixes can help you figure out the meaning of new words.

[pass out lined paper and pencils to all students]

I am giving you a piece of paper and a pencil to use for the rest of our lesson. Please keep your pencil underneath your paper throughout the lesson unless I tell you to use it.

Look at this overhead with me.
[OVERHEAD #1]

A prefix is a group of letters in front of a word that has meaning. *Pre-* in the word *prefix* is a prefix! You have probably seen the prefix *pre-* in your reading. All prefixes have meaning. *Pre-* means "before."

[teacher calls on student] Read the definition of a prefix again from the overhead.

Student: [reads definition] "A prefix is a group of letters in front of a word that has meaning."

Teacher: Everyone, read the definition of a prefix together with me (signal).

Teacher

& Students: A prefix is a group of letters in front of a word that has meaning.

Teacher: Pick up your pencils and write the word *prefix* at the top of your paper. Make one circle around the letters *p, r, e* in the word...you just circled the prefix *pre-*. You will always find a prefix at the beginning of a word. Pencils under your papers, please.

I am going to show you some prefixes.

[write *mis-* on the white board]

Mis- is a prefix. *Mis-* means “bad or wrong.” So if I put the prefix *mis-* in front of the root word *calculate*, I get the word *miscalculate*.

[demonstrate on white board; write *miscalculate* on white board]

If I miscalculate a math problem, it means I got the WRONG answer to the math problem.

Another prefix is *anti-*.

[write *anti-* on the white board]

The definition of *anti-* is “against.” So if I put the prefix *anti-* in front of the root word *smoking*, I get the word *antismoking*.

[demonstrate on white board; write *antismoking* on white board]

A person who belongs to an antismoking organization is a person who is AGAINST cigarettes, cigars, or pipes.

Another prefix is *mid-*.

[write *mid-* on the white board]

The prefix *mid-* means “middle.” If I put the prefix *mid-* in front of the root word *week*, I get the word *midweek*.

[demonstrate on white board; write *midweek* on white board]

If I went to a midweek basketball game, it means the game took place in the MIDDLE of the week. What days are in the middle of the week?

Students: [answers may include Tuesday, Wednesday, Thursday]

Teacher: [praise] So a “midweek basketball game” is a game that took place on Tuesday, Wednesday, or Thursday.

Although you can list prefixes by themselves, like *pre-*, *mis-*, *anti-*, and *mid-*, they are mostly attached to words that we already know. We call these root words—like week and calculate (circle these root words on the white board). A prefix changes the meaning of a root word.

I am going to write some words on the white board that have a prefix. I want you to identify the prefix and the root words.

Write:

unhealthy
misplace
antismoking
midpoint

Listen as I read these words. [point to each word and read the list]

Students: Raise your hand if you know the root word for “unhealthy.”
[individual turns; go through the list for root words]

Teacher: Raise your hand if you know the prefix for “unhealthy.”

Students: [individual turns; go through the list again for prefixes]

Teacher & Nice job. Now let’s read through this list together. [point to each word as you

Students: read the list]

[praise] [point to “unhealthy”] Now we’re just going to read the root words. As I point to each word, say the root word together. First root word? (signal)

Students: “healthy”

Teacher: Next root word? (signal)

Students: “place”

Teacher: Next root word? (signal)

Students: “smoking”

Teacher: Last root word? (signal)

Students: "midpoint"
[praise]

[OVERHEAD #2]

Look at the word *unhappy*. The prefix *un-* is attached to the root word *happy*. *Un-* means "not." Everybody, what does *un-* mean? (signal)

Students: "not"

Teacher: [praise] When a prefix is attached to a root word, the meaning of the root word changes. Listen again to the rule.

Rule: When a prefix is attached to a root word, the meaning of the root word changes.

Look at these examples.

[Write on white board:]
"mismatch"

This word is "mismatch." Raise your hand if you know the root word.

Student: "match"

Teacher: Yes, "match." Will the meaning of the root word change? (signal)

Students: Yes

Teacher: How do you know the meaning will change?

Student(s): Because there is a prefix attached.

Teacher: Yes, the meaning of the word will change because there is a prefix attached. Watch what I do.

[erase *mis-* on white board]

Raise your hand if you know the root word.

Student: "match"

Teacher: Yes, "match." Will the meaning of the root word change? (signal)

- Students: No
- Teacher: How do you know the meaning will not change?
- Student(s): Because there isn't a prefix attached.
- Teacher: Correct. The meaning of the word will not change because there is no prefix attached to the root word "match." Watch.
- [add the prefix re- to "match" on the white board]
- This word is "rematch." Raise your hand if you know the root word.
- Student: "match"
- Teacher: Yes, "match." Will the meaning of the root word change? (signal)
- Students: Yes
- Teacher: How do you know the meaning will change?
- Student(s): Because there is a prefix attached.
- Teacher: Yes, the meaning of the word will change because there is a prefix. Let's try another example.
- [Write on white board:]
"antistress"
- This word is "antistress." Raise your hand if you know the root word.
- Student: "stress"
- Teacher: Yes, "stress." Will the meaning of the root word change? (signal)
- Students: Yes
- Teacher: How do you know the meaning will change?
- Student(s): Because there is a prefix attached.
- Teacher: Yes, the meaning of the word will change because there is a prefix attached. Watch.
- [Erase *anti-* and write *over-* on white board:]

“overstress”

This word is “overstress.” Raise your hand if you know the root word.

Student: “stress”

Teacher: Yes, “stress.” Will the meaning of the root word change? (signal)

Students: Yes

Teacher: How do you know the meaning will change?

Student(s): Because there is a prefix attached.

Teacher: Yes, the meaning of the word will change because there is a prefix. Let’s look at another word.

[Write on white board:]

“space”

This word is “space.” Raise your hand if you know the root word.

Student: “space”

Teacher: Yes, “space.” Will the meaning of the root word change? (signal)

Students: No

Teacher: How do you know the meaning will not change?

Student(s): Because there isn’t a prefix attached.

Teacher: Correct. The meaning of the word will not change because there is no prefix attached to the root word “space.”

[Write on white board:]

“afraid”

This word is “afraid.” Raise your hand if you know the root word.

Student: “afraid”

Teacher: Yes, “afraid.” Will the meaning of the root word change? (signal)

Students: No

- Teacher: How do you know the meaning will not change?
- Student(s): Because there isn't a prefix attached.
- Teacher: Correct. The meaning of the word will not change because there is no prefix attached to the root word. Watch.
- [write un- in front of "afraid" on the white board]
- This word is "unafraid." Raise your hand if you know the root word.
- Student: "afraid"
- Teacher: Yes, "afraid." Will the meaning of the root word change? (signal)
- Students: Yes
- Teacher: How do you know the meaning will change?
- Student(s): Because there is a prefix attached.
- Teacher: Yes, the meaning of the word will change because there is a prefix.
- [refer to OVERHEAD #2] Now, let's look back at the word *happy*. What is the root word?
- Students: Happy
- Teacher: What is a word that means the same thing as *happy*?
- Students: [write student responses on white board]
[Answers may include "glad," "cheerful," etc.]
- Teacher: (praise) Yes. Those are all good words that mean the same thing as *happy*. So here is a new rule: RULE: When you combine the meaning of the prefix with the meaning of the root word, you have a good definition. The prefixed word "unhappy" means "not glad" or "not cheerful." Look at the white board.
- Teacher: [write un- = not
happy = glad
unhappy = not glad
unhappy = not cheerful]

The prefix *un-* means “not.” The word happy means “glad.” So a definition for *unhappy* is “not glad.” I know this is a good definition because I combined the meaning of the prefix with the meaning of the root word.

Excellent. In our lessons, we are going to look at words that have a prefix and break them into two parts: the prefix and the root word.

Let’s review what we just did with the word *unhappy*. First, what was the prefix for *unhappy*? (signal)

Students: *un-*

Teacher: What was the root word for *unhappy*? (signal)

Students: *happy*

Teacher: What is the definition for *un-*?

Students: “not”

Teacher: What is the definition for *happy*?

Students: “glad,” “cheerful”

Teacher: What is the definition for *unhappy*? (signal)

Students: “not glad” or “not cheerful”

Teacher: Is this a good definition?

Students: yes

Teacher: (individual turn) How do you know that this is a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Awesome work! Let’s do a few more examples. (Write “undefeated” on the white board).

This word is *undefeated*. Everyone, say this word together. (signal)

Students: *undefeated*

- Teacher: (point to the word) What is the prefix? (signal)
- Students: *un-*
- Teacher: What is the root word? (signal)
- Students: *defeated*
- Teacher: What does the prefix mean? (signal)
- Students: "not"
- Teacher: What does the root word mean OR what is another word that means the same thing as "defeated?" (signal)
- Students: [answers may include, "they lost," "losing," "being frustrated," etc.]
- Teacher: Now put it all together. "Undefeated." What does the prefixed word *undefeated* mean?
- Students: [not losing, not being frustrated, etc.]
[decide on a definition after hearing responses and write it on white board]
- Teacher: Is this a good definition?
- Students: yes
- Teacher: How do you know it's a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.
- Teacher: Excellent. Look at this word. (Write "mislead" on the white board).

This word is *mislead*. (pronounced "lead" as in "feed") Everyone, say this word together. (signal)
- Students: *lead*
- Teacher: (point to the word) What is the prefix? (signal)
- Students: *mis-*
- Teacher: What is the root word? (signal)
- Students: *lead*

- Teacher: The prefix *mis-* means “bad or wrong. What does the prefix mean? (signal)
- Students: “bad or wrong”
- Teacher: What does the root word mean OR what is another word that means the same thing as “lead?” (signal)
- Students: [answers may include, “go in front, guide, you plan, in charge, etc.]
- Teacher: Now put it all together. What does the prefixed word *mislead* mean?
- Students: [bad guide, wrong plan, etc.]
[decide on a definition after hearing responses and write it on white board]
- Teacher: Is this a good definition?
- Students: yes
- Teacher: How do you know it’s a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.
- Teacher: You’re doing great. Watch.

(Erase *lead* and write “misbelieve” on the white board).

This word is *misbelieve*. Everyone, say this word together. (signal)
- Students: *misbelieve*
- Teacher: (point to the word) What is the prefix? (signal)
- Students: *mis-*
- Teacher: What is the root word? (signal)
- Students: *believe*
- Teacher: What does the prefix mean? (signal)
- Students: “bad or wrong”

- Teacher: What does the root word mean OR what is another word that means the same thing as “believe?” (signal)
- Students: [answers may include, “to trust,” “to have confidence in,” “to have faith,” etc.]
- Teacher: Now put it all together. “Misbelieve.” What does the prefixed word *misbelieve* mean?
- Students: [“to believe wrongly,” “bad confidence,” etc.]
[decide on a definition after hearing responses and write it on white board]
- Teacher: Is this a good definition?
- Students: yes
- Teacher: How do you know it’s a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.
- Teacher: Excellent. Before we end our lesson today, everyone write the word *prefix* on your paper again. (students write) Now circle the letters *pre-*. Remember, you will always find prefixes at the beginning of words just like in the word *prefix*. So use the word *prefix* as a reminder.

[collect materials]

END OF INTRODUCTION LESSON

A prefix is a
group of
letters in front
of a word that
has meaning.

unhappy =

un- + happy 
not root word or "real word"

=

not glad

Lesson 1: en-

Teacher: Today we're going to review what we learned about prefixes.

[write *unselfish* on the white board]

This word is *unselfish*. Everyone, say this word together. (signal)

Students: "Unselfish."

Teacher: (point to word) What is the prefix? (signal)

Students: *un-*

Teacher: What is the root word? (signal)

Students: *selfish*

Teacher: What does the prefix mean? (signal)

Students: "Not."

Teacher: What does the root word mean OR what is another word that means the same thing as *selfish*?

Students: [answers will vary and may include mean, stuck up, greedy, not nice, etc.]
[if students do not respond, give examples]

Teacher: (praise) Let's use the word *mean*. Now put it all together. What is a good definition for the prefixed word *unselfish*?

Students: "Not mean."

Teacher: [Write *unselfish = not mean* on white board]

Look at the white board. Now we know that the word *selfish* means "not mean."

Is this a good definition?

Students: Yes

Teacher: How do you know it's a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

[Begin LESSON 1: *en-*]

Review 10 root words; 6 root words from Lesson 1, 4 root words from the Prefixed Word Assessment selected for that day.

Root Words to Review:

1. large
2. list
3. trap
4. code
5. slave
6. joy
7. _____
8. _____
9. _____
10. _____

Teacher: Please write your name on today's worksheet.
[Pass out Student Worksheet for *en-*, pencils]

Teacher: Today you will be working with the prefix *en-*. *En-* is a prefix that has more than one meaning. [OVERHEAD: STUDENT WORKSHEET FOR *en-*] (show definitions one at a time) The first meaning of the prefix *en-* is "make." Write this definition on your paper.

[Teacher completes Student Worksheet on OVERHEAD throughout lesson]

The next definition for *en-* is "do something with." Write "do something with" next to Number 2 on your paper.

Everyone, read the first definition for *en-* (signal).

Students: "make"

Teacher: [praise] Say the second definition for *en-* (signal).

Students: "do something with"

Teacher: You don't have to use all the meanings for a prefix when you think of a good definition. Use your best judgment to decide which definition makes sense.

Here is our first word. *Enlarge*. Write *enlarge* on your paper next to the first star.

(students write *enlarge* on worksheet)
[teacher continues to model using OVERHEAD]

Teacher: (point to the word) What is the prefix? (signal)

Students: *en-*

Teacher: What is the root word? (signal)

Students: *large*

Teacher: What does the prefix mean? (signal)

Students: "make" or "do something with"

Teacher: What is a word that means the same thing as "large?" (signal)

Students: [answers may include, "big," "huge," "gigantic," etc.]

Teacher: Excellent. Let's use the word *big*. Write "big" next to the triangle on your paper.

Since *en-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let's try Definition #1.

[write on white board]
enlarge = make bigger

Definition #1 is "make bigger." Here's Definition #2.

[write on white board]
enlarge = "with bigger" or "with something bigger"

Definition #2 is "with bigger" or "with something bigger." Everyone, say the definition that makes the most sense.

Students: "make bigger"

- Teacher: Good. (erase “with bigger” and “with something bigger”) So *enlarge* means “make bigger.” What does the prefixed word *enlarge* mean?
- Students: “make bigger”
- Teacher: (point to the definition) Is this a good definition?
- Students: yes
- Teacher: How do you know it’s a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.
- Teacher: Excellent. Write “make bigger” on your worksheet next to the equal sign. When you enlarge something, you make it bigger.
- Let’s try another word. *Enlist*. Write *enlist* on your paper next to the second star.
- [model steps on OVERHEAD worksheet]
- Teacher: (point to the word) What is the prefix? (signal)
- Students: *en-*
- Teacher: What is the root word? (signal)
- Students: *list*
- Teacher: What does the prefix mean? (signal)
- Students: “make” or “do something with”
- Teacher: What is a word that means the same thing as “list?”(signal)
- Students: arrange
- Teacher: Yes, *arrange*. Write “arrange” next to the triangle on your paper.
- Since *en-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.
- [write on white board]
enlist = make arrange

Definition #1 is “make arrange.” Here’s Definition #2.

[write on white board]

enlarge = “with arrange” or “with something arrange”

Definition #2 is “with arrange” or “with something arrange.” Everyone, say the definition that makes the most sense.

Students: “make arrange”

Teacher: Good. (erase “with arrange” and “with something arrange”) So *enlist* means “make arrange.” We would say “make an arrangement.” What does the prefixed word *enlist* mean?

Students: “make an arrangement”

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “make an arrangement” on your worksheet next to the equal sign.

If you make an arrangement to help with a service project, you could say that you “enlisted” to help out, or you made an arrangement to help. So by breaking down the word *enlist* into a prefix and a root word, we figured out that *enlist* means to “make an arrangement.”

Let’s look at one more example. Pencils under your paper.

[write *entrap* on white board and circle *en-*]

Teacher: (point to the word) What is the prefix? (signal)

Students: *en-*

Teacher: What is the root word? (signal)

Students: *trap*

Teacher: What does the prefix mean? (signal)

- Students: “make” or “do something with”
- Teacher: What is a word that means the same thing as “trap?”(signal)
- Students: [answers may include, “catch,” “capture,” etc.]
- Teacher: What does the prefixed word *entrap* mean?
- Students: [responses will vary; may include “make a catch,” “make a capture,” “do something like a capture,” etc.]
[decide on a definition after hearing responses and write it on white board]
- Teacher: (point to the definition) Is this a good definition?
- Students: yes
- Teacher: How do you know it’s a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.
- Teacher: Correct. If you “entrap” something, it means that you made a catch. So by breaking apart the word *entrap* into a prefix and a root word, we made good definition.
- Teacher: Our lesson for the day is nearly over. At the bottom of your worksheet is a box with some prefixed words. Complete the rest of the worksheet on your own, doing the very best you can. Your classmates cannot help you. If you really get stuck, you may raise your hand and I will help you. Remember, you can always look for clues that are already on your worksheet, like the definitions of the prefix and strategies we used to break the word into a prefix and a root word. Do your best. When you are finished, please raise your hand and I will come and get your paper. Then sit at your desk quietly and read or work on other assignments until everyone is finished.
- [erase whiteboard; turn off overhead]
[students engage in Independent Practice]

END OF LESSON 1: *en-*

Lesson 1: Student Worksheet

Name _____

*en-*Definitions of en-

1. _____

2. _____

✓ _____

⑩ _____

= _____

✓ _____

⑩ _____

= _____

Directions: Write a word that means the same thing for each item.

1. enlarge = _____

2. encode = _____

3. enslave = _____

4. enlist = _____

5. enjoy = _____

Lesson 2: sub-

- Teacher: Today we're going to review what we learned about prefixes.
[write *enlarge* on the white board]
This word is *enlarge*. Everyone, say this word together. (signal)
- Students: "Enlarge."
- Teacher: (point to word) What is the prefix? (signal)
- Students: *en-*
- Teacher: What is the root word? (signal)
- Students: *large*
- Teacher: What does the prefix mean? (signal)
- Students: "make," or "do something with."
- Teacher: What does the root word mean OR what is another word that means the same thing as *large*?
- Students: "big."
- Teacher: (praise) Now put it all together. What is a good definition for the prefixed word *enlarge*?
- Students: "Make big." ["Make bigger."]
- Teacher: [Write *enlarge = make bigger* on white board]
Look at the white board. Now we know that the word *enlarge* means "make bigger."

Is this a good definition?
- Students: Yes
- Teacher: How do you know it's a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.

[Begin LESSON 2: *sub-*]

Review 10 root words; 6 root words from Lesson 1, 4 root words from the Prefixed Word Assessment selected for that day.

Root Words to Review:

11. soil
12. average
13. heading
14. task
15. skill
16. conscious
17. _____
18. _____
19. _____
20. _____

Teacher: Please write your name on today's worksheet.
[Pass out Student Worksheet for *sub-*, pencils]

Teacher: Today you will be working with the prefix *sub-*. *Sub-* is a prefix that has more than one meaning. [OVERHEAD: STUDENT WORKSHEET FOR *sub-*] (show definitions one at a time) The first meaning of the prefix *sub-* is "under." Write this definition on your paper.

[Teacher completes Student Worksheet on OVERHEAD throughout lesson]

The next definition for *sub-* is "below." Write "below" next to Number 2 on your paper.

The next definition for *sub-* is "almost." Write "almost" next to Number 3 on your paper.

Everyone, read the first definition for *sub-* (signal).

Students: "under"

Teacher: [praise] Say the second definition for *sub-* (signal).

Students: "below"

Teacher: [praise] Say the third definition for *sub-* (signal).
 Students: “almost”

Teacher: You don’t have to use all the meanings for a prefix when you think of a good definition. Use your best judgment to decide which definition makes sense.

Here is our first word. *Subtask*. Write *subtask* on your paper next to the first star.

(students write *subtask* on worksheet)
 [teacher continues to model using OVERHEAD]

Teacher: (point to the word) What is the prefix? (signal)

Students: *sub-*

Teacher: What is the root word? (signal)

Students: *task*

Teacher: What does the prefix mean? (signal)

Students: “under” or “below” or “almost”

Teacher: What is a word that means the same thing as “task?”(signal)

Students: [answers may include “job, duty, assignment”]

Teacher: Excellent. Let’s use the word *assignment*. Write “assignment” next to the triangle on your paper.

Since *sub-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.

[write on white board]
subtask = under assignment

Definition #1 is “under assignment.” Here’s Definition #2.

[write on white board]
subtask = below assignment

Definition #2 is “below assignment.” Here’s Definition #3.

[write on white board]

subtask = almost assignment

Definition #3 is “almost assignment.” Everyone, say the definition that makes the most sense.

Students: “below assignment” [or any other definition; individual turn]

Teacher: Good. (erase “under assignment” and “almost assignment”) So *subtask* means “below assignment.” What does the prefixed word *subtask* mean?

Students: “below assignment”

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “below assignment” on your worksheet next to the equal sign. When you have an assignment, the steps for completing that assignment are known as the subtasks—they come below the main task.

Let’s try another word. *Subsoil*. Write *subsoil* on your paper next to the second star.

[model steps on OVERHEAD worksheet]

Teacher: (point to the word) What is the prefix? (signal)

Students: *sub-*

Teacher: What is the root word? (signal)

Students: *soil*

Teacher: What does the prefix mean? (signal)

Students: “under” or “below” or “almost”

Teacher: What is a word that means the same thing as “soil?” (signal)

Students: dirt, ground

Teacher: Yes, *dirt or ground*. Write “dirt, ground” next to the triangle on your paper.

Since *sub-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.

[write on white board]

subsoil = under dirt, under ground

Definition #1 is “under the dirt,” or “under the ground.” Here’s Definition #2.

[write on white board]

subsoil = “below dirt, below ground”

Definition #2 is “below the dirt” or “below the ground.” Here’s Definition #3.

[write on white board]

subsoil = “almost dirt, almost ground”

Everyone, say the definition that makes the most sense.

Students: “under dirt” [or any other definition; individual turn]

Teacher: Good (erase other definitions and leave “under dirt” remaining). So *subsoil* means “under the dirt.” What does the prefixed word *subsoil* mean?

Students: “under the dirt”

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “under the dirt” on your worksheet next to the equal sign.

You can think of it this way: subsoil is the layer below the dirt, like another layer of the dirt that is underneath. So by breaking down the word *subsoil* into a prefix and a root word, we figured out that *subsoil* means “under the dirt.”

Let’s look at one more example. Pencils under your paper.

[write *subheading* on white board and circle *sub-*]

Teacher: (point to the word) What is the prefix? (signal)

Students: *sub-*

Teacher: What is the root word? (signal)

Students: *heading*

Teacher: What does the prefix mean? (signal)

Students: “under” or “below” or “almost”

Teacher: What is a word that means the same thing as “heading?”(signal)

Students: “title.”

Teacher: What does the prefixed word *subheading* mean?

Students: [responses will vary; may include “under the title,” “below the title,” “almost the title,” etc.]

[decide on a definition after hearing responses and write it on white board]

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Correct. If you read a subheading in a newspaper, it means that you read the title below the main title. A subheading is a second title that goes under the main heading. So by breaking apart the word *subheading* into a prefix and a root word, we made good definition.

Teacher: Our lesson for the day is nearly over. At the bottom of your worksheet is a box with some prefixed words. Complete the rest of the worksheet on your own, doing the very best you can. Your classmates cannot help you. If you really get stuck, you may raise your hand and I will help you. Remember, you can always look for clues that are already on your worksheet, like the definitions of the prefix and strategies we used to break the word into a prefix and a root word. Do your best. When you are finished, please raise your hand and I will come and get your paper. Then sit at your desk quietly and read or work on other assignments until everyone is finished.

[erase whiteboard; turn off overhead]

[students engage in Independent Practice]

END OF LESSON 2: *sub-*

Lesson 2: Student Worksheet

Name _____

*sub-*Definitions of *sub-*

1. _____

2. _____

3. _____

✓ _____

⑩ _____

= _____

✓ _____

⑩ _____

= _____

Directions: Write a word that means the same thing for each item.

6. subaverage = _____

7. subheading = _____

8. subconscious = _____

9. subcategory = _____

10. subsoil = _____

Lesson 3: inter-

- Teacher: Today we're going to review what we learned about prefixes.
[write *subtask* on the white board]
This word is *subtask*. Everyone, say this word together. (signal)
- Students: "Subtask."
- Teacher: (point to word) What is the prefix? (signal)
- Students: *sub-*
- Teacher: What is the root word? (signal)
- Students: *task*
- Teacher: What does the prefix mean? (signal)
- Students: "Under, below, almost."
- Teacher: What does the root word mean OR what is another word that means the same thing as *task*?
- Students: [duty, job, assignment]
[if students do not respond, give examples]
- Teacher: (praise) Let's use the word *assignment*. Now put it all together. What is a good definition for the prefixed word *subtask*?
- Students: "below assignment, below the assignment."
- Teacher: [Write *subtask = below the assignment* on white board]
Look at the white board. Now we know that the word *subtask* means "below the assignment." When you have an assignment, the steps for completing that assignment are known as the subtasks—they come below the main task.

Is this a good definition?
- Students: Yes
- Teacher: How do you know it's a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

[Begin LESSON 3: *inter-*]

Review 10 root words; 6 root words from Lesson 1, 4 root words from the Prefixed Word Assessment selected for that day.

Root Words to Review:

21. act
22. change
23. industry
24. connect
25. family
26. national
27. _____
28. _____
29. _____
30. _____

Teacher: Please write your name on today's worksheet.
[Pass out Student Worksheet for *inter-*, pencils]

Teacher: Today you will be working with the prefix *inter-*. *Inter-* is a prefix that has more than one meaning. [OVERHEAD: STUDENT WORKSHEET FOR *inter-*] (show definitions one at a time) The first meaning of the prefix *inter-* is "between." Write this definition on your paper.

[Teacher completes Student Worksheet on OVERHEAD throughout lesson]

The next definition for *inter-* is "among." Write "among" next to Number 2 on your paper.

Everyone, read the first definition for *inter-* (signal).

Students: "between"

Teacher: [praise] Say the second definition for *inter-* (signal).

Students: "among"

Teacher: You don't have to use all the meanings for a prefix when you think of a good definition. Use your best judgment to decide which definition makes sense.

Remember, you want to use the word "between" when there are two people involved. Use the word "among" when there are more than two people involved. For example, if I told a secret to my friend Elizabeth, then the secret would be just "between" us. But if I told my secret to five of my friends, then the secret would be known "among" us. I will put this clue on the white board.

Write:

Between – 2 only

Among – 3 or more

Here is our first word. *Interact*. Write *interact* on your paper next to the first star.

(students write *interact* on worksheet)

[teacher continues to model using OVERHEAD]

Teacher: (point to the word) What is the prefix? (signal)

Students: *inter-*

Teacher: What is the root word? (signal)

Students: *act*

Teacher: What does the prefix mean? (signal)

Students: "between" or "among"

Teacher: What is a word that means the same thing as "act?"(signal)

Students: [do/doing, behave]

Teacher: Excellent. Let's use the word *doing*. Write "doing" next to the triangle on your paper.

Since *inter-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let's try Definition #1.

[write on white board]
interact = between doing

Definition #1 is “between doing.” Here’s Definition #2.

[write on white board]
interact = “among doing”

Definition #2 is “among doing.” Everyone, say the definition that makes the most sense.

Students: “between doing” or “among doing”

Teacher: Good. So *interact* means “between doing.” Think this through. If you interact with someone, you are doing something between you, like talking or working. What does the prefixed word *interact* mean?

Students: “doing between”

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “doing [something] between” on your worksheet next to the equal sign. When you interact with someone, you are communicating with them by talking or working.

Let’s try another word. *Interchange*. Write *interchange* on your paper next to the second star.

[model steps on OVERHEAD worksheet]

Teacher: (point to the word) What is the prefix? (signal)

Students: *inter-*

Teacher: What is the root word? (signal)

Students: *change*

Teacher: What does the prefix mean? (signal)

Students: “between” or “among”

Teacher: What is a word that means the same thing as “change?”(signal)

Students: switch

Teacher: Yes, *switch*. Write “switch” next to the triangle on your paper.

Since *inter-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.

[write on white board]

interchange = between switch [or switch between]

Definition #1 is “between switch.” Here’s Definition #2.

[write on white board]

interchange = “among switch”

Definition #2 is “among switch.” Everyone, say the definition that makes the most sense.

Students: “between switch”

Teacher: Good (erase “among switch). So *interchange* means “between switch.” We could say “switch between.” If you missed an interchange while driving down the road, you missed your chance to get on the right road. You should have made a switch between roads. What does the prefixed word *interchange* mean?

Students: “between switch” or “switch between”

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “between switch” on your worksheet next to the equal sign.

Let's look at one more example. Pencils under your paper.

[write *interindustry* on white board and circle *inter-*]

Teacher: (point to the word) What is the prefix? (signal)

Students: *inter-*

Teacher: What is the root word? (signal)

Students: *industry*

Teacher: What does the prefix mean? (signal)

Students: "between" or "among"

Teacher: What is a word that means the same thing as "industry?"(signal)

Students: [business]

Teacher: What does the prefixed word *interindustry* mean?

Students: ["between business" or "among business"]
[decide on a definition after hearing responses and write it on white board]

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it's a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Correct. If you were an interindustry worker, you would be working for more than one business. So by breaking apart the word *interindustry* into a prefix and a root word, we made good definition.

Teacher: Our lesson for the day is nearly over. At the bottom of your worksheet is a box with some prefixed words. Complete the rest of the worksheet on your own, doing the very best you can. Your classmates cannot help you. If you really get stuck, you may raise your hand and I will help you. Remember, you can always look for clues that are already on your

worksheet, like the definitions of the prefix and strategies we used to break the word into a prefix and a root word. Do your best. When you are finished, please raise your hand and I will come and get your paper. Then sit at your desk quietly and read or work on other assignments until everyone is finished.

[erase whiteboard; turn off overhead]

[students engage in Independent Practice]

END OF LESSON 3: *inter-*

Lesson 3: Student Worksheet

Name _____

*inter-*Definitions of *inter-*

1. _____

2. _____

✓ _____

⑩ _____

= _____

✓ _____

⑩ _____

= _____

Directions: Write a word that means the same thing for each item.

11. interact = _____

12. international = _____

13. interconnect = _____

14. interfamily = _____

15. interchange = _____

Lesson 4: fore-

- Teacher: Today we're going to review what we learned about prefixes.
[write *interact* on the white board]
This word is *interact*. Everyone, say this word together. (signal)
- Students: "Interact."
- Teacher: (point to word) What is the prefix? (signal)
- Students: *inter-*
- Teacher: What is the root word? (signal)
- Students: *act*
- Teacher: What does the prefix mean? (signal)
- Students: "between," or "among."
- Teacher: What does the root word mean OR what is another word that means the same thing as *act*?
- Students: "doing, behave"
- Teacher: (praise) Now put it all together. What is a good definition for the prefixed word *interact*?
- Students: "between doing" ["doing between"]
- Teacher: [Write *interact = between doing* on white board]
Look at the white board. Now we know that the word *interact* means "between doing."
Is this a good definition?
- Students: Yes
- Teacher: How do you know it's a good definition?
- Students: Because I combined the meaning of the prefix with the meaning of the root word.

[Begin LESSON 4: *fore-*]

Review 10 root words; 6 root words from Lesson 1, 4 root words from the Prefixed Word Assessment selected for that day.

Root Words to Review:

31. father
32. warn
33. man
34. knowledge
35. see
36. ground
37. _____
38. _____
39. _____
40. _____

Teacher: Please write your name on today's worksheet.
[Pass out Student Worksheet for *fore-*, pencils]

Teacher: Today you will be working with the prefix *fore-*. *Fore-* is a prefix that has more than one meaning. [OVERHEAD: STUDENT WORKSHEET FOR *fore-*] (show definitions one at a time) The first meaning of the prefix *fore-* is "before." Write this definition on your paper.

[Teacher completes Student Worksheet on OVERHEAD throughout lesson]

The next definition for *fore-* is "front." Write "front" next to Number 2 on your paper.

The next definition for *fore-* is "the leader." Write "the leader" next to Number 3 on your paper.

Everyone, read the first definition for *fore-* (signal).

Students: "before"

Teacher: [praise] Say the second definition for *fore-* (signal).

Students: "front"

Teacher: [praise] Say the third definition for *fore-* (signal).

Students: “leader”

Teacher: You don’t have to use all the meanings for a prefix when you think of a good definition. Use your best judgment to decide which definition makes sense.

Here is our first word. *Forefather*. Write *forefather* on your paper next to the first star.

(students write *forefather* on worksheet)
[teacher continues to model using OVERHEAD]

Teacher: (point to the word) What is the prefix? (signal)

Students: *fore-*

Teacher: What is the root word? (signal)

Students: *father*

Teacher: What does the prefix mean? (signal)

Students: “before” or “front” or “leader”

Teacher: What is a word that means the same thing as “father?”(signal)

Students: [answers may include “parent, dad”]

Teacher: Excellent. Let’s use the word *parent*. Write “parent” next to the triangle on your paper.

Since *fore-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.

[write on white board]
forefather = before parent

Definition #1 is “before parent.” Here’s Definition #2.

[write on white board]
forefather = front parent

Definition #2 is “front parent.” Here’s Definition #3.

[write on white board]

forefather = leader parent

Definition #3 is "leader parent." Everyone, say the definition that makes the most sense.

Students: "before parent" [or any other definition; individual turn]

Teacher: Good. (erase "front parent" and "leader parent") So *forefather* means "before parent." What does the prefixed word *forefather* mean?

Students: "before parent" [parent before]

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it's a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write "before parent" on your worksheet next to the equal sign. Someone who is your forefather is someone who lived before you. My forefathers are the generations of parents who lived before me.

Let's try another word. *Forewarn*. Write *forewarn* on your paper next to the second star.

[model steps on OVERHEAD worksheet]

Teacher: (point to the word) What is the prefix? (signal)

Students: *fore-*

Teacher: What is the root word? (signal)

Students: *warn*

Teacher: What does the prefix mean? (signal)

Students: "before" or "front" or "leader"

Teacher: What is a word that means the same thing as "warn?" (signal)

Students: alert, caution

Teacher: Yes, *alert or caution*. Write “alert, caution” next to the triangle on your paper.
 Since *fore-* has more than one definition, we need to combine each prefix definition with the root word definition and choose the combination that makes the most sense. Let’s try Definition #1.

[write on white board]
forewarn = “before alert, before caution”

Definition #1 is “before alert,” or “alert before” or “before caution,” or “caution before.” Here’s Definition #2.

[write on white board]
forewarn = “front alert, front caution”

Definition #2 is “front caution” or “front alert.” Here’s Definition #3.

[write on white board]
forewarn = “leader alert, leader caution”

Everyone, say the definition that makes the most sense.

Students: “before alert” [or any other definition; individual turn]

Teacher: Good (erase other definitions and leave “before alert” remaining). So *forewarn* means “before alert.” What does the prefixed word *forewarn* mean?

Students: “before alert” [or “alert before”]

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Excellent. Write “before alert” on your worksheet next to the equal sign.

You can think of it this way: If you need to forewarn someone, it means you need to alert them before something bad happens. It also means you need to caution them. A mother who lives on a busy street would need to

forewarn her children about watching for cars, or she would alert or caution them before they play outside in the yard. So by breaking down the word *forewarn* into a prefix and a root word, we figured out that *forewarn* means “before alert” or “alert before.”

Let’s look at one more example. Pencils under your paper.

[write *foreman* on white board and circle *fore-*]

Teacher: (point to the word) What is the prefix? (signal)

Students: *fore-*

Teacher: What is the root word? (signal)

Students: *man*

Teacher: What does the prefix mean? (signal)

Students: “before” or “front” or “leader”

Teacher: What is a word that means the same thing as “man?”(signal)

Students: “male, guy”

Teacher: What does the prefixed word *foreman* mean?

Students: [responses will vary; may include “before guy,” “leader guy,” “front male,” etc.]

[decide on a definition after hearing responses and write it on white board]

Teacher: (point to the definition) Is this a good definition?

Students: yes

Teacher: How do you know it’s a good definition?

Students: Because I combined the meaning of the prefix with the meaning of the root word.

Teacher: Correct. If you were the foreman of your company, you would be the guy in charge. You would be the leader. So by breaking apart the word *foreman* into a prefix and a root word, we made good definition.

Teacher: Our lesson for the day is nearly over. At the bottom of your worksheet is a box with some prefixed words. Complete the rest of the worksheet on

your own, doing the very best you can. Your classmates cannot help you. If you really get stuck, you may raise your hand and I will help you. Remember, you can always look for clues that are already on your worksheet, like the definitions of the prefix and strategies we used to break the word into a prefix and a root word. Do your best. When you are finished, please raise your hand and I will come and get your paper. Then sit at your desk quietly and read or work on other assignments until everyone is finished.

[erase whiteboard; turn off overhead]

[students engage in Independent Practice]

END OF LESSON 4: *fore-*

Lesson 4: Student Worksheet

Name _____

*fore-*Definitions of fore-

1. _____

2. _____

3. _____

✓ _____

⑩ _____

= _____

✓ _____

⑩ _____

= _____

Directions: Write a word that means the same thing for each item.

16. forejudge = _____

17. foresee = _____

18. foreknowledge = _____

19. forefather = _____

20. forewarn = _____

Appendix E

Most Common Prefixes & Prefix Definitions for Instruction

20 Most Frequent Prefixes

Prefix	Words with the prefix
un-	782
re-	401
in-, im-, ir-, il- (not)	313
dis-	216
en-, em-	132
non-	126
in-, im- (in or into)	105
over- (too much)	98
mis-	83
sub-	80
pre-	79
inter-	77
fore-	76
de-	71
trans-	47
super-	43
semi-	39
anti-	33
mid-	33
under-	25
TOTAL	2,959

Note. Modified from White, Sowell, and Yanagihara (1989).
(Baumann, 88).

Prefix Definitions:

Sources: *dictionary.com*

Merriam-Webster's Collegiate Dictionary, Eleventh Edition, 2005

<i>en-</i>	<i>sub-</i>	<i>inter-</i>	<i>fore-</i>
"to cause a person or thing to be in"	"under"	"between"	"before"
"to confine in or place on"	"below"	"among"	"front"
"to restrict"	"beneath"	"mutually"	"superior"
"with, in"	"slightly"	"reciprocally"	"situated in front of something else"
"to put into or onto"	"imperfectly"	"together"	
"to go into or onto"	"nearly"	"during"	
"to cover or provide with"	[chemistry definitions]		
"to cause to be"	"less than completely or normal"		
"thoroughly"	"almost"		
"in, into, within"	"underneath or lower"		
"cause to be, make"	"secondary part of something else"		
"cover with"	"less quantity, low state or degree"		
"provide with"	"position under"		
"so as to cover"			

Prefix Definitions to use for Instruction:

<i>en-</i>	<i>sub-</i>	<i>inter-</i>	<i>fore-</i>
"make"	"under"	"between"	"before"
"do something with"	"below"	"among"	"front"
	"almost"		"the leader"

Appendix F
Prefix Survey Sample

Prefix Survey

Name _____

Date _____

*Directions:**Write the definition of the following prefixes (write what you think the word part means).*

1. en- _____

2. non- _____

3. over- _____ *

4. mis- _____

5. sub- _____

6. inter- _____

7. fore- _____

8. trans- _____

9. super- _____ *

10. semi- _____

11. anti- _____

12. mid- _____

13. under- _____ *

Appendix G
Results of Prefix Survey Sample

Results of Prefix Survey Sample

Participants in School #1: 4 students with disabilities, 12 regular education = 16 total

Participants in School #2: 11 students with disabilities, 0 regular education = 11 total

Total number of participants in survey = 27

PREFIX	# OF CORRECT RESPONSES	% CORRECT RESPONSES
<i>en-</i>	0	0%
<i>non-</i>	6	22%
<i>over-</i>	0	0%
<i>mis-</i>	4	15%
<i>sub-</i>	1	.04%
<i>inter-</i>	0	0%
<i>fore-</i>	0	0%
<i>trans-</i>	0	0%
<i>super-</i>	2	.07%
<i>semi-</i>	6	22%
<i>anti-</i>	7	26%
<i>mid-</i>	13	48%
<i>under-</i>	5	19%

Appendix H

Root Word Assessment Example

Name _____

Root Word Assessment

Directions: Write a word or phrase that means the same thing for each item.

1. list = _____
2. force = _____
3. trap = _____
4. joy = _____
5. chapter = _____
6. fuse = _____
7. camp = _____
8. mingle = _____
9. coastal = _____
10. family = _____
11. father = _____
12. industry = _____
13. head = _____
14. most = _____
15. go = _____
16. national = _____
17. ground = _____
18. tell = _____
19. man = _____
20. see = _____

Appendix I

Synonyms for Root Words Scoring Rubric

en-

Definitions: (1) make (2) do something with

ROOT WORD	ROOT WORD SYNONYMS TO TEACH	PREFIXED WORD
1. large	big	enlarge
2. list	arrange	enlist
3. trap	catch, capture	entrap
4. force	power, authority	enforce
5. chant	sing or talk in repetition with rhythm in the same tone	enchant
6. slave	servant, laborer	enslave
7. entomb	grave	entomb
8. courage	brave, fearless, guts	encourage
9. able	capable	enable
10. dear	precious	endear
11. joy	happiness	enjoy
12. sure	certain	ensure
13. code	secret language, puzzle	encode
14. camp	settlement, home	encamp
15. rich	valuable	enrich

sub-

Definitions: (1) under (2) below (3) almost

ROOT WORD	ROOT WORD SYNONYMS TO TEACH	PREFIXED WORD
1. soil	dirt, ground	subsoil
2. task	duty, job, assignment	subtask
3. heading	title	subheading
4. zero	nothing, a freezing temperature	subzero
5. standard	expectation	substandard
6. marine	referring to the sea	submarine
7. conscious	awareness	subconscious
8. chapter	section	subchapter
9. normal	regular	subnormal
10. average	ordinary, common	subaverage
11. agent	worker	subagent
12. total	final amount, sum	subtotal
13. category	group	subcategory
14. tropical	hot	subtropical
15. topic	subject	subtopic

inter-

Definitions: (1) between (2) among

ROOT WORD	ROOT WORD SYNONYMS TO TEACH	PREFIXED WORD
1. act	do/doing, behave	interact
2. change	switch	interchange
3. industry	business	interindustry
4. mingle	socialize	intermingle

5. cultural	traditional	intercultural
6. city	big town	intercity
7. coastal	shore, beach	intercoastal
8. cosmic	universe, outside the earth	intercosmic
9. national	nationwide	international
10. family	relatives	interfamily
11. active	effort	interactive
12. connect	join	interconnect
13. faith	religion	interfaith
14. mix	blend	intermix
15. fuse	combine	interfuse

fore-

Definitions: (1) before (2) front (3) the leader

ROOT WORD	ROOT WORD SYNONYMS TO TEACH	PREFIXED WORD
1. father	parent, dad	forefather
2. warn	alert, caution	forewarn
3. head	skull	forehead
4. most	greatest	foremost
5. go	leave	forego
6. man	male, guy	foreman
7. see	observe, view	foresee
8. ground	land	foreground
9. thought	thinking, idea	forethought
10. judge	rule, decide	forejudge
11. tell	say, speak	foretell
12. knowledge	understanding	foreknowledge
13. shock	jolt	foreshock
14. sight	vision	foresight
15. bode	omen (a good/evil event)	forebode

Appendix J

Instructional Routine for Teaching Unknown Root Words

Instructional Routine for Unknown Root Words using the word *courage*

Teacher: We have been talking about root words. Let's get ready to review.

Listen. The root word is courage. What word?

Students: Courage.

Teacher: Yes, courage. A word that means the same things as courage is brave. What word? (signal)

Students: brave

Teacher: Excellent. Try to remember at least one/two NEW words for the word courage. How about brave and fearless?

[individual turns to each student]

Tell me a word that means the same thing as courage.

Student: [response]

Teacher: [praise] Let's move on to the next word. Listen. The root word is _____ . What word?

[repeat and continue for additional root words to be taught]

Appendix K

Sentence Comprehension Assessment Scoring Rubric

Sentence Comprehension Assessment Scoring Rubric

1. Jenny needed to buy new clothes due to the subzero conditions.

Prompt: Tell me about the kind of clothes Jenny should buy.

(Acceptable Answers: Jenny should buy winter clothes; Jenny should buy warm clothes like a coat, gloves, and boots; Jenny should buy long pants and long-sleeved shirts; student response or answer that approximates these responses and addresses the context presented in the question (e.g., must identify clothes for cold weather))

2. The attendance rules at Lisa's new school were not enforced.

Prompt: What is something Lisa could have done?

(Acceptable Answers: Lisa could have skipped/sluffed school; Lisa could be tardy for class; Lisa could have stayed home; student response or answer that approximates these responses and/or addresses the context presented in the question (e.g., must indicate a viable option when rules are not enforced))

3. Mrs. Smith is the foremost advisor on rocket science.

Prompt: What can you tell me about what Mrs. Smith knew about rocket science?

(Acceptable Answers: Mrs. Smith knew a lot/the most about rocket science; Mrs. Smith is the one to talk to about rocket science; Mrs. Smith was best person to help you with rocket science; student response or answer that approximates these responses and/or addresses the context presented in the question (e.g., knowledge that Mrs. Smith had because she was versed in rocket science))

4. Sally loved to intermingle when she left the house.

Prompt: Tell me what Sally loved to do.

(Acceptable Answers: Sally loved to spend time with friends; Sally liked to talk to people and be around them; Sally liked to hang out/mess around with her friends; student response or answer that approximates these responses (e.g., Sally was a social person))

5. Steven enchanted Melinda.

Prompt: What happened between Steven and Melinda?

(Acceptable Answers: Steven charmed Melinda; Steven put a spell on Melinda; Steven got Melinda to like him; Steven and Melinda were in love; student response or answer that approximates these responses)

6. The quality of Joe's work was substandard.

Prompt: If Joe was a painter, tell me about his work.

(Acceptable Answers: Joe was a bad/poor painter; Joe didn't get hired to do a lot of jobs; student response or answer that approximates these responses; the student must include a context (e.g., address the quality of Joe's painting as poor or the outcomes of the painting on future work))

7. Brad was in the intercultural music group.

Prompt: What kind of music did Brad like?

(Acceptable Answers: Brad liked music from different countries/places; Brad liked music that he could sing with his friends; Brad liked music where there different races of people; student response or answer that approximates these responses)

8. Tony often foregoes skateboarding for tennis on the weekend.

Prompt: What does Tony do on the weekend?

(Acceptable Answers: Tony likes to play tennis on the weekend; Tony doesn't skateboard on the weekend, he plays tennis; Tony likes to play tennis with his friends; student response or answer that approximates these responses)

Appendix L

Social Validity Rating Scale

Social Validity Rating Scale for Students

Name _____

1. Did you like or dislike learning root words? Why?

2. Do you feel like your vocabulary is better since you learned the meanings for root words? Explain.

3. Is it easier for you to identify root words when you read by yourself? _____

4. Is it easier for you to look for prefixes when you read by yourself? _____

5. What was something you liked about the prefix lessons?

6. What was something you disliked about the prefix lessons?

7. What would you change to make prefix instruction better?

8. Do you think you know more about vocabulary than you did before you started working on prefixes? If yes, give some examples of what you know now.

9. You learned the prefixes en-, sub-, inter-, and fore-. Would you like to learn more prefixes?

10. Overall, do you feel smarter after learning about prefixes or do you feel the same as you always have? Explain.

11. Has learning about prefixes helped you be a better reader? How?

Appendix M
Instructional Fidelity Checklist

Instructional Fidelity Checklist

Y/N	Procedure	Feedback
	Root Word Review	
	Previous Prefix Reviewed	
	Clear responses from students, both responding together and individual turns	
	Teacher followed the script for the lesson	
	Teacher administered Independent Practice	
	Teacher follow the above prescribed sequence	

Appendix N
Consent Form

Date Prepared: November 30, 2009

INFORMED CONSENT: PARENT/GUARDIAN PERMISSION**The effects of teaching prefix meaning and a strategy to derive word meaning on a prefix vocabulary test and sentence comprehension test for middle school students with learning disabilities**

Introduction/ Purpose Shannon Harris in the Department of Special Education and Rehabilitation at Utah State University is conducting a research study to find out more about vocabulary strategies that are effective for students to acquire word knowledge and improve reading comprehension. You have been asked to take part and provide consent because your child qualifies for special education services under IDEA in the area of reading and demonstrates the need to improve reading vocabulary skills. There will be approximately six participants at this site. There will be approximately six total participants in this research.

Procedures If you agree to be in this research study, the following will happen to your child.

- 1. Participant will receive vocabulary instruction addressing word parts in order to independently determine the meaning of unfamiliar words.*
- 2. Participant will engage in this study on a daily basis during the regular school day until all four lessons have been administered.*
- 3. The duration of the study is anticipated to be 8-10 weeks.*
- 4. In addition to receiving vocabulary instruction, students will also take assessments throughout the study to measure progress or a lack of progress.*

New Findings During the course of this research study, you will be informed of any significant new findings (either good or bad), such as changes in the risks or benefits resulting from participation in the research, or new alternatives to participation that might cause you to change your mind about continuing in the study. If new information is obtained that is relevant or useful to you, or if the procedures and/or methods change at any time throughout this study, your consent to continue participating in this study will be obtained again.

Risks Participation in this research study may involve some added risks or discomforts. These include

- 1. Your child may feel "different" because he/she is being pulled into a small group as a participant in this study.*

INFORMED CONSENT: PARENT/GUARDIAN PERMISSION**The effects of teaching prefix meaning and a strategy to derive word meaning on a prefix vocabulary test and sentence comprehension test for middle school students with learning disabilities**

Benefits There may or may not be any direct benefit to you from these procedures. The investigator, however, may learn more about effective vocabulary instruction when working with students with disabilities that will contribute to the research for determining the best teaching methods to help students in the area of reading. Participants in this study may benefit from the vocabulary instruction that was designed to help increase students' ability to acquire vocabulary and improve reading comprehension.

Explanation & offer to answer questions Shannon Harris has explained this research study to you and answered your questions. If you have other questions or research-related problems, you may reach Shannon Harris at 458-4936.

Voluntary nature of participation and right to withdraw without consequence

Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence or loss of benefits. You may be withdrawn from this study without your consent by the investigator when appropriate. If your child begins to withdraw from the study due to being overwhelmed or if your child engages in noncompliant behaviors, his or her participation may be terminated by the investigator without the participant's consent.

Confidentiality Research records will be kept confidential, consistent with federal and state regulations. (If it's an investigational drug/device study, the FDA has maintained the right to review the records and a statement MUST be made here). Only the investigator and other school certified staff members will have access to the data which will be kept in a locked file cabinet in a locked room. Personal, identifiable information will be kept for one year in order to finish analyzing data and finalize results.

IRB Approval Statement The Institutional Review Board for the protection of human participants at USU has approved this research study. If you have any pertinent questions or concerns about your rights or a research-related injury, you may contact the IRB Administrator at (435) 797-0567 or email irb@usu.edu. If you have a concern or complaint about the research and you would like to contact someone other than the research team, you may contact the IRB Administrator to obtain information or to offer input.

Date Prepared: November 30, 2009

INFORMED CONSENT: PARENT/GUARDIAN PERMISSION

The effects of teaching prefix meaning and a strategy to derive word meaning on a prefix vocabulary test and sentence comprehension test for middle school students with learning disabilities

Copy of consent You have been given two copies of this Informed Consent. Please sign both copies and retain one copy for your files.

Investigator Statement "I certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

Signature of PI & student or Co-PI

Shannon K Harris
Student Investigator
(Telephone—(208) 458-4936)

Benjamin Lignugaris/Kraft
Principal Investigator

Signature of Parent(s)/Guardian By signing below, I agree to participate.

Parent(s)/Guardian Signature

Date

Date Prepared: November 30, 2009

INFORMED CONSENT: PARENT/GUARDIAN PERMISSION

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Child/Youth Assent: I understand that my parent(s)/guardian is/are aware of this research study and that permission has been given for me to participate. I understand that it is up to me to participate even if my parents say yes. If I do not want to be in this study, I do not have to and no one will be upset if I don't want to participate or if I change my mind later and want to stop. I can ask any questions that I have about this study now or later. By signing below, I agree to participate.

Name (please print)

Date

Child/Youth Signature

Date

Signature of Translator (if applicable) By signing below, I agree that the information on this consent form has been translated effectively and accurately to the parent(s)/guardian of the child.

Name

Date