KEYWORD MNEMONIC STRATEGY: A STUDY OF S.A.T. VOCABULARY IN
HIGH SCHOOL ENGLISH

by

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DEDICATION

This is dedicated to my wonderful family, Glen, Kara, and Tristan. Your support and patience far outweigh any words I can speak. Through Christ all things are possible!

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I would like to thank all the people who helped me throughout the past five years especially my darling husband Glen for all his support. My family allowed me to exist and Dr. Margo Mastropieri allowed me to tap into all of her time, resources, and energy. It is only with the assistance of those around you that a task of this undertaking can occur.

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ABSTRACT

KEYWORD MNEMONIC STRATEGY: A STUDY OF SAT VOCABULARY IN HIGH SCHOOL ENGLISH

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The purpose for this research study was to introduce and develop supplementary English material for SAT vocabulary instruction by providing memory-enhancing strategies for students with and without disabilities. Five inclusive English classrooms were assigned treatments in a within-subjects crossover design where all students received both treatment conditions – traditional instruction and mnemonic instruction. Memory-enhancing strategies are mnemonic devices that target specific vocabulary and provide additional practice using a visual representation to increase comprehension. Mnemonic devices assist students with encoding the new content information in order to make retrieval easier. Participants included 103 students in 10th through 12th grade, including 31 students with disabilities. Two general education teachers and two special education teachers participated in this study. Students received instruction in two units for four weeks and were pre and post tested on all vocabulary introduced. Students were given strategy use and satisfaction surveys. Attitudinal and satisfaction surveys were also given

to teachers. Overall findings revealed that students with disabilities performed significantly better on delayed cumulative posttest. Tenth grade students in the mnemonic condition performed descriptively higher on delayed cumulative posttest than eleventh and twelth graders. The majority of students responded that, compared to traditional instruction, they preferred and enjoyed the use of mnemonic strategies as well as learned how to generalize to their own learning preferences. Teacher attitudes varied but mostly favored mnemonic instruction. Findings are discussed with respect to differences from previous research, implications for practice, and future research.

CHAPTER 1 **Introduction**

All teachers, including those who teach students at-risk and students with disabilities, continue to look for ways to improve vocabulary instruction. As students progress in school, the complexity of word knowledge dramatically increases. By the time a student advances to the middle and high school grades vocabulary encountered comes from all different content areas: mathematics, science, music, physical education, technology, etc. The sheer volume of new vocabulary introduced can overwhelm students who struggle in school. Many students experience challenges acquiring new vocabulary. Students with learning disabilities have memory difficulties which impede their ability to learn new vocabulary, but also difficulty with new language acquisition. Beck and McKeown (1991) published figures that estimate children learn something like 2,500 to 3,000 year. Regardless of whether this range of estimates is exactly accurate, it is not paradoxical to imagine the limitations or inadequate development for some children.

Nagy and Scott (2000) describe five aspects of the complexity of word knowledge as recognized by vocabulary researchers in the *Handbook of Reading Research*. First, learning new words is incremental – it's not all or nothing. Second, vocabulary is multidimensional – word knowledge consists of several different types of knowledge. Third, it is polysemy – multiple meanings. Fourthly, knowledge of one word is

interrelated to other words, and finally, meanings of words have heterogeneity – what it means to know a word can differ depending on the kind of word. If students are to become active and independent vocabulary learners, some grasp of how complex word knowledge can be and some process of learning needs to be developed in their instruction. Vocabulary instruction must produce specific understanding and recognition of words not just a diet of roots, suffixes, and prefixes and definitions.

Students with learning disabilities (LD) can benefit from specific strategies to learn vocabulary visually and contextually. One proven strategy is using the memory enhancing device of keyword mnemonics which are instrumental in assisting in factual recall tasks. Mnemonic strategies have been proven to be effective for students who are engaged in learning new words for concepts not just definitions. For example, if a student wished to learn the English translation of the Spanish word pato (duck), the first step would be to learn an acoustically similar word as the keyword such as *pot.* The second step requires the student to form an interactive image involving the keyword *pot* and a duck, such as an image of a duck with a pot on its head. The Spanish vocabulary word is now phonetically encoded (e.g. pot) and semantically encoded (e.g. duck) into the interactive visual image. Pot then becomes the means for remembering the meaning of the word pato. When the student is presented with the word *pato*, the image of a pot on the duck's head triggers the memory of the desired response of duck (Levin, 1983). Factual knowledge and vocabulary instruction are important in content area classes at the secondary level (Scruggs & Mastropieri, 1992) and on high stakes assessments such as Virginia's Standards of Learning (Hess & Brigham, 2000; VDOE). Keyword

mnemonics has been shown to improve memory for new vocabulary and other content information of students with LD (Scruggs & Mastropieri, 2000).

However, other approaches to teaching vocabulary also exist. For example, some researchers argue that mnemonics strategies do not support long term retention (Krinsky & Krinsky, 1994), while those with extensive research specifically in mnemonic strategies do because, "over and over again, they have been proven to be extremely effective in helping people remember things" (Mastropieri & Scruggs, 1998, p. 202). Stahl (1986) recommended giving "both context and definitions" in vocabulary instruction including synonyms, antonyms, prefixes, roots, suffixes, and classification (p.663). Accordingly, Baumann and Kame'enui (1991) stated, "three levels of word knowledge that can be used to consider depth in understanding and related instructional procedures: *association, comprehension,* and *generation"* (p. 201).

While research literature to date has provided positive outcomes in the use of various vocabulary strategies to aid in all students learning, special populations show cause for alarm. Secondary students continue to be at-risk in academic settings. Students with disabilities face more challenges academically than their peers. In 2007, the Virginia Standards of Learning (SOL) reports 84% of all students passed the reading assessment, while only 75% of students with disabilities and 79% of limited English proficient students passed the assessment (VDOE, 2008). There are a number of reasons for lower performance levels for these groups of students. Many students classified as a student with a disability are categorized as learning disabled (LD). Students with learning disabilities typically struggle in the areas of memorization (O'Shannssey &

Swanson, 1998), reading deficits (Lerner, 2003), and improper use of and selection of strategies (Mastropieri & Scruggs, 2007). Developing a general vocabulary knowledge is also important to English language learners (ELL). Likewise, this group of students also falls behind their peers in state assessments (VDOE, 2008).

Statement of the Problem

Students with LD have challenges with memory which contribute to lower vocabulary levels and comprehension problems. What is needed are ways to help students with LD and other students at risk for learning. Previous research has reported some helpful strategies and instructional approaches for improving vocabulary through personalizing word learning and active engagement of students in the learning process (Nagy & Scott, 2000).

In the latest edition of Handbook of Research on Reading Comprehension, Graves (1986) provided "convincing evidence that teaching vocabulary can increase comprehension of texts containing the words taught" (p. 61). His analysis described 14 intervention studies (eight of which positively identified vocabulary instruction's link to comprehension), whereas Graves included that comprehension from vocabulary instruction was evident when it was versatile, of extended duration, included multiple encounters with words, and involved semantic associations among words. Automaticity in lexical access to vocabulary was promoted (Miller & Faircloth, 2008).

Wolgemuth and Cobb recently published a meta-analysis of effects in mnemonic interventions in Learning Disabilities Research (2008). They stated that "secondary students with disabilities are particularly at risk in academic settings" (p. 1). Secondary

students and teachers face challenges with the constraints of No Child Left Behind and standards based learning and assessment. These studies focus on the effectiveness of mnemonic instruction and particular ways of producing better outcomes. The gap in this meta-analysis, where this study hopes to gain insight to, is how this strategy can benefit secondary students in a language arts classroom, students with or without disabilities. Struggling students need strategic methods to assist in learning and retaining information. The focus on the vocabulary instruction in the language arts classroom, with emphasis on more developed words related to the state standards and the nationally recognized college entrance assessment SAT, was addressed in this study.

Students with LD often struggle with memorization (Swanson, 1987). Everyday school tasks such as learning new vocabulary can be overwhelming. These students lack practical skills in mastery of material outlined by district curriculum. Devising a strong vocabulary positively relates to other tasks, including listening comprehension, reading, and general oratory (Polloway, Smith, & Miller, 2003).

High Stakes Testing

New level of accountability measures began with the passing of No Child Left Behind (NCLB) on January 8, 2002. NCLB requires states to create standardized assessments for all students in all content areas – reading, writing, mathematics, social studies, and science. At the high school level, students must pass these standards in order to graduate. Teachers need to use active strategies to help all students at all levels pass these standards. In Virginia, the standards include two high school assessments in English – one test for reading and another for writing. Clearly, an interest in best

practices for teachers responsible for the academic achievement of students under these mandates need assistance.

Students with disabilities lack the skills to perform well on high-stakes tests (Fuchs & Fuchs, 2001).   These problems consist of reading and writing, cognition, memory, and organization and problem solving (Hallahan & Kauffman, 2006; Mastropieri & Scruggs, 2007).   Research has demonstrated that poor readers show deficiencies in relation to vocabulary knowledge and learning.   Baker, Simmons, and Kameenui (1995b) argued most interventions have proved success in some settings as no one method of instruction proved better than another.   Vocabulary is an area of difficulty for many students with learning disabilities.   Therefore, vocabulary knowledge of diverse learners needs to be addressed strategically and comprehensively if debilitating educational effects are to be avoided (Kameenui & Carnine, 1998, p. 34).

My Experience with the Problem

As a high school teacher with many years experience working with students with and without disabilities in the English classroom, there have been students every year that struggle with reading because of their lack of vocabulary development.   Words are shared, taught, and reviewed but retention exists only in a rote memorization drill and retrieval manner.   Educators, including myself, need to better equip students with strategic explicit practices to learn and use vocabulary that will aid in better understanding of reading materials, reading comprehension, and future word knowledge and associations.

Many teachers ask special educators how to provide a tool kit for students at all levels to use.   A resource with strategies students will enjoy, utilize, and recognize.   If the student finds no enjoyment or usefulness in a given strategy, the memorization of it will soon fade away.   Teachers in high school English generally have the opportunity to formulate student's perception of reading into their college and professional years.   By expanding their vocabulary with more difficult, sometimes more precise vocabulary, students may enter college and adult life better equipped to understand the most basic situations – a Presidential debate, a college professor, a media presentation, or a character in a movie such as Captain Jake Sparrow "Well Mr. Turner, I've changed my mind.   If you spring me from this cell, I swear on pain of death, I shall take you to the Black Pearl and your bonnie lass.   Do we have an accord?"
(http://www.imdb.com/title/tt0325980/quotes)

The issue of focus here is whether or not mnemonics (memory enhancing strategies) will help students systematically learn, apply and expand the use of vocabulary, additionally how learning these strategies impact the student's diction and memory of new material.   The problem encountered in my classrooms is twofold: first teachers introduce new vocabulary quickly and independently of other reading or writing assignments.   Secondly, students tend to memorize the vocabulary without understanding how to apply the new words, new forms of the words, or how to use in their own writing.   When strategically placing new vocabulary with a visual component benefits exist for both teachers and students.   Teachers are able to introduce more words in a shorter period of time and students increase the use of the words and general

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comprehension of how the words are used.   The goal is to increase overall

comprehension and strategy implementation.

The inclusion of specific vocabulary instruction is important in the high school

classroom.   Although the focus was on frequently used SAT vocabulary, the strategic

concept through memory enhancing strategies is not specific to any one content area, nor

is it exclusively applicable to older students.   Keyword mnemonics may significantly

benefit struggling readers of all ages, and incorporating them into daily classroom

instruction will help increase vocabulary, comprehension, and diction in writing.   In

reviewing the literature on struggling readers, little research has been found specifically

addressing older students; much of the research is seen at the beginning reading stages.

Vocabulary instruction is key to better comprehension for all students, but direct and

systematic instruction is especially essential for students at risk, with a know disability,

and those learning English as a second language. This study intended to accomplish a

better understanding of how to incorporate the keyword mnemonic strategy into the

classroom.

There are many things this study can address about memory enhancing strategies.

First how the teachers will perceive the strategy and its usefulness at the high school

level.   The program used contained cartoon pictures that connected to keyword and

vocabulary word. While the vocabulary was pertinent to older students, the visual

component was simplistic.

The second item of concern was what the students might think, how they view

learning vocabulary, and why they believe they continue to struggle with vocabulary and

comprehension in high school.   Is there some connection between vocabulary and comprehension that keeps them from increasing their basic reading and writing skills? The use of mnemonic devices has been used in my own classroom but student perceptions were not addressed during instruction.   Students with disabilities are many times cognizant of how difficult learning in the traditional classroom can be for them. Whether not they actually use these strategies in other classes is unknown.

Significance of the Problem

Teachers need to be aware of the most effective means of educating children. Changes in the requirements and accountableness of educators in the proliferation of high stakes testing require changes in business-as-usual in the classroom.   The purpose for this research project was to develop, and obtain evidence of potential efficacy of, supplementary English/literature material providing mnemonic (memory-enhancing) strategies, for students with and without a disability in tenth, eleventh, and twelfth grade English classrooms.   Memory-enhancing strategies are mnemonic devices that target specific vocabulary and provide additional practice using a visual representation to increase comprehension with teacher selected SAT vocabulary words.   These materials, as they are developed, were implemented in the English inclusion classroom.   A study design was implemented, to compare the performance on pre- and post- authentic literature tests of the student who will participate in the implementation or comparison condition. The students will receive the mnemonic condition and participate in the activities related to the visual materials used.   The aim of the research project is to teach mnemonic strategies and evaluate whether further research is appropriate.   Throughout

this investigation, my goal was to gain a deeper understanding of the best practices for struggling learners and students perception of the usefulness and retention of the new vocabulary.   This study was useful to understanding what supports or hinders students' ability to learn new vocabulary with application in their classrooms, and state and national testing.

Research Questions

A within-subjects crossover design incorporating a two-condition intervention (experimental and control conditions) and a follow up survey of the students were used in this study within five high school English classrooms.   The specific research questions that will guide the study are:

1. How does teaching SAT vocabulary with or without the use of mnemonics impact learning on:

    a. All Students in secondary inclusive English classes

    b. Students with disabilities

2. What are the perceptions and strategic learning of students from both conditions of instruction?

3. Is there a significant difference between student achievement for students with and without disabilities?

4. What benefits do students discover when taught vocabulary instruction using a keyword strategy?

5. What benefits do teachers discover when teaching vocabulary with the keyword mnemonic strategy?

Definition of Key Terms

English

Term given to high school language arts classroom.

ESL

English as a second language

General Education Teacher

A teacher certified to teach by the state either as a generalist or in a content area.

Inclusive Classrooms

Classrooms that have students with disabilities and regular education students in one classroom.

Item Type

Questions taught either with mnemonic cards (embedded strategies) or traditional methods (non embedded strategies)

Mnemonics

A memory an instructional strategy that connects new information with prior knowledge by means of visual and acoustic clues (Mastropieri, Sweda, and Scruggs 2000).

SOL (Standards of Learning)

The curriculum standards teachers must follow

Special Education Teacher

A teacher certified by the state to teach students with disabilities.

Team taught classes

A class consisting of a general education teacher and a special education teacher.

CHAPTER 2 **Literature Review**

The current chapter describes the literature review. This description includes a

presentation of topics including: (a) vocabulary development, (b) vocabulary instruction

with at-risk populations, (c) the search procedures followed by specific research most

relevant to keyword mnemonic strategies, and (d) the rational for the study.

Vocabulary Development

What format for vocabulary learning should teachers consider? Should words be

introduced prior to reading a selection or is it conducive to discuss vocabulary as it is

actually encountered in the reading? (Robinson, 2005). These questions are but a few

teachers and researchers ask when addressing vocabulary instruction. As early as 1907,

Professor E.A. Kirkpatrick began tallying the number of words a typical student knew.

Thirty years later Edward Dolch (1936) developed his famous list of 220 sight words.

And recently, the researchers Blachowicz and Fisher (2000, 2001, 2004) looked at

vocabulary lessons and stated,

> Developing a strong vocabulary not only promotes reading comprehension but
>
> also enables us to actively participate in our society. People often consider a
>
> strong vocabulary the hallmark of an educated person. Pick up any in-flight
>
> magazine and you will find articles and ads selling programs and books that
>
> promise to help you 'increase your vocabulary' and 'learn to speak like a CEO',

reinforcing the importance of vocabulary in preparing students to enter the world

of work (p. 66).

Teachers of all grades continue to look for ways to improve vocabulary

instruction. A faltering picture is the role of the school and teacher in the development

of vocabulary knowledge (Robinson, 2005). Along with instructional practices comes a

students' need for continued vocabulary development. Nagy and Herman (1985)

believed by increasing the amount of time a child spends reading, the child has the

opportunity to increase the number of independent words learned. How do students

develop these vocabularies that are introduced?

Basic Sight Word Vocabulary

Researchers have studied the number of words a person should know. These

include basic sight word vocabulary and different methods of determining which words

rank as important. According to Kirkpatrick (1907), the average number of words for

normal high school students were 19,000 words and college students 20,120 words. The

breadth of this relationship was discovered by students counting all the words on every

fifteenth page in an abridged dictionary (Kirkpatrick, 1907). Students placed + signs by

the words they knew and – signs by the ones they did not.

In comparison the Dolch (1936) word list was derived from the comparison of

essential words from the Child Study Committee of the International Kindergarten Union

(1928), Gates List (1926), and Wheeler and Howell (1930). According to Dolch (1936),

65% of all the words in primary grades reading material are included in his famous list of

220 words. It should be noted, however, that most basic sight words did not include

nouns. Dolch (1936) considered the universality of nouns to be insignificant based on their variability in settings. Anytime a new subject was introduced, new nouns naturally appeared. While Kirkpatrick (1907) and Dolch (1936) both studied the need for a basic list of words needed for students, neither claimed their methodology was flawless.

Dolch (1936) did take into account specific words used by primary children and from the three sources used in his study, Child Study Committee of the International Kindergarten Union (1928), Gates List (1926), and Wheeler and Howell (1930) gave a compilation of what he called "tool" words that all children should know and use in writing, no matter what the subject. Kirkpatrick (1907) did not identify a specific list of words.

Children in intermediate grades also struggled with sight word vocabulary. Dolch commented, "perhaps one reason that many children in the intermediate grades do not know by sight the words on this basic list is that the emphasis on sight teaching has been on nouns instead of on these 'tool' words". Nouns cannot be of universal use because a noun is tied to special subject matter (Dolch, 1936). Accordingly, when a child in any grade was found to be limited in sight word vocabulary, he would be tested and trained to recognize basic words. Dolch (1936) recommended practices such as the use of flash cards and repetitive practice of the sight words for such training. Kirkpatrick (1907) specifically studied the number of words a student knew and did not make student recommendations.

To summarize the studies of Kirkpatrick (1907) and Dolch (1936), the assumption was made that children needed an essential list of basic words in order for reading growth

to occur.   No particular word list was inclusive of all the basic words, and methods of determining the basic words were different depending on the study.   Approximation in the number of words varied in the studies, from thousands of words to a basic list of 220 words.   According to Kirkpatrick (1907), the best lists were obtained by Webster's academic dictionary.   Dolch (1936) did not claim that the list of 220 basic sight words was a comprehensive list for all elementary school pupils, but stated that the words should at least be known.

Increasing Reading Vocabulary

In order for a student's reading vocabulary to grow, students need to read. Teaching individual word meanings, sight word vocabulary, and/or resources from a textbook may not be enough.   Nagy and Herman (1985) stated that reading vocabulary grows at the rate of 3,000 words per school year between grades three and twelve for the average student.   Focus on the possible contribution to vocabulary growth, to a large extent the only thing under the teacher's control, is reading.   According to Kirkpatrick (1907), students who were able to name more books and magazines showed a larger vocabulary.

Concerned with the effectiveness of vocabulary growth, Nagy and Herman (1985) then addressed different approaches to vocabulary instruction.   The two main areas studied were the size of the student's vocabulary and increasing a student's ability to comprehend text (Robinson, 2005).   Simply memorizing words from a list did not ensure that students understood the meanings of vocabulary words.   Educators and parents need

to recognize the importance of vocabulary instruction. Developing a strong reading vocabulary promotes reading comprehension (Blachowiez & Fisher, 2004).

Biemiller (2001) stated a young students reading vocabulary usually runs about two years behind his or her oral vocabulary. Since oral language is significant to the early development of language, a strong base should be formed early on (Sticht & James, 1984). Exposure to books and other reading materials is critical to vocabulary development during the schooling years (Nagy & Herman, 1987).

There are many reasons for teach reading vocabulary besides the fact that it increases the size of the vocabulary. Text is better understood when children know more words (Robinson, 2005). Nagy and Herman (1985) argued that learning a word from written context should not be underestimated even if it means the only information gained is relatively small. The one time encounter of a word, knowing only one meaning of the word, may not constitute very deep word knowledge. However, it may provide a foundation for learning new exposures to a word in the future. Blachowiez and Fisher (2004) on the other hand stated important developments in vocabulary instruction can be found in development of word awareness, the love of words through word play, rich instruction, independent reading, and availability of a wide range of books.

In summary, scholars agree that vocabulary development is necessary to successful reading practices. The number of appropriate words and at rate the words are taught depending on other developmental factors. Vocabulary growth needs to continue into the upper grades to support more difficult text and adaptability to differ types of reading materials.

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Vocabulary Instruction with At-Risk Students

Approaches to vocabulary instruction differ based on the individual student. However, the importance of vocabulary knowledge is well documented in the research for continued student success in school and building of reading comprehension (Anderson & Nagy, 1991; Baker, Simmons, & Kameenui, 1998; Becker, 1977; Cunningham & Stanovich, 1998) Robinson (2005) argued that children who know more words understand text better.   Teaching the meaning of individual words may assist in specific word lessons but it may not result in a substantial increase in vocabulary depth. Nagy and Herman (1985) reported vocabulary instruction increases students' speaking and writing vocabularies, scores on standardized testing, and specific learning concepts in content areas.   There is a vast array of research on vocabulary instruction; these studies highlight the general belief in the field.

General Topic of Vocabulary

According to Nagy and Herman (1985), there are two defenses for "superficial" vocabulary instruction.   First, the level of word knowledge required for reading improvement, i.e. comprehension, can be gained only if there are multiple exposures to a word.   Second, learning definitions alone does not show significance or enhancement in reading comprehension.   How does one decide a reasonable yardstick rule for measuring the number of words to develop? Nagy and Herman (1985) recommended possible types of vocabulary development that included affixes, context clues, awareness of words and their meanings, and motivation for students to learn them (Robinson, 2005).

Nilsen and Nilsen (2003) addressed concerns in teaching vocabulary to fulfill the requirements seen in standardized tests. It was argued that simply giving word lists, sentences, and dictionary definitions, students were unlikely to gain any true value. Additionally the study stated, "language is a social phenomenon, which mean that students need to interact with other speakers and hear pronunciations and intonations, as well as words used in more variety than brief dictionary entries can capture" (Robinson, 2005, p. 165). The recommendation was a process approach to vocabulary instruction. An example of the process approach could be to teach students the word *quarantine*. Then expand the process by teaching roots, other words that are related *quartus*, and words used everyday like *quarterback, French Quarter, soldier's quarters* on a military base. Teachers would talk with students about various applications of *quartus*. Going into such detail provided the opportunity for students to learn the language processes not just the definitions. Students need to know what parts of the word have commonalities and differences.

Hedrick, Harmon, and Linerode (2004) conducted a survey of teachers in grades 4 - 8 to explore their beliefs and practices in vocabulary instruction, specifically in the use of district assigned social studies textbooks. The results of the survey found the best vocabulary instructional practices as (a) a new word is acquired through learning about the topic and information about the topic, (b) children learn new words through their experiences, such as participating in an activity, (c) having prior knowledge about a subject helps children learn new, related words, and (d) learning a new word means developing a concept of ideas related to that word. Hedrick, Harmon, and Linerode

(2004) continue to support the research that there are widely accepted practices of teaching children new words.

Blachowiez and Fisher (2004) proposed four practices educators could use to implement a comprehensive approach to vocabulary development. First, the creation of a positive environment for word learning activities was needed to enable students through "word play". Second, the authors recommended instruction through the STAR model. STAR stands for select, teach, activate, and revisit. The third practice proposed was independence. This practice encouraged students to become independent readers with the use of the dictionary – "an important tool for word learning" (Blachowiez & Fisher, 2004, p. 68). Finally the fourth practice was to engage students actively with a wide range of books to read. Suggestions for exposure included read alouds, book clubs, literature circles, guided reading, and library time.

To conclude, research indicated that vocabulary development could make a difference with the teachers' incorporation of the above mentioned practices. Blachowiez and Fisher (2004) stated, "One of the longest, most clearly articulated lines of research in literacy education describes the connection between readers' vocabulary knowledge and their reading comprehension (National Reading Panel, 2000)." Developing a strong vocabulary enables active participation in our society. Nagy and Herman (1985) believed success could be obtained when the opportunity to learn new words included regular, sustained reading by the student. Both studies comparatively supported each studies claim that it is important to determine what types of vocabulary

instruction can effectively increase students' ability to learn independently (Robinson,

2005; Nagy & Herman, 1985).

Research on Students with Learning Disabilities

Students will disabilities often lag behind their peers in reading comprehension.

They have an insufficient vocabulary and infrequent opportunities to read contextually.

Difficulty therefore arises in general language based activities.   While research optimizes

vocabulary instruction, specifics to students with disabilities is sparse.   Jitendra,

Edwards, Sacks and Jacobson (2004) summarize the published research available on

vocabulary with students with learning disabilities.

As discussed there is no one best method of vocabulary instruction.   General

discussion in the literature stated guidelines fall into three categories: reading,

development of vocabulary, and approaches to optimize word learning.   (Jitendra et al.,

2004; Biemiller, 2001; Snow, 2002).

Students need to be encouraged to read both independently and collaboratively.

The use of authentic text allows for vocabulary development and word learning, therefore

the text should be carefully selected.   Based on estimates from the research, a typical

independent reading session of 10 minutes provides substantial vocabulary growth

(Adams, 1990; Anderson & Nagy, 1991; Cunningham & Stanovich, 1998).

Vocabulary needs to be explicitly and directly taught (Biemiller, 2001).   Stahl

and Siel (1999) argued that 300 to 400 words need to be purposefully taught each year.

Considering the direct connection of vocabulary to comprehension and the number of

words encountered, this appears noteworthy.   Explicit vocabulary instruction needs to

include words important to the text and words that are functional to the students understanding (Stahl, 1986).   Finally, words need be taught in productive approaches that optimize word learning (Snow, 2002).   This includes approaches in semantics, connections to other words (i.e. word analysis, affixes), words directly from the text, word study, and semantic mapping (Baumann & Kameemui, 1994).

Jitendra et al. (2004) reviewed 19 studies appropriate to students with learning disabilities evaluating for effect size (ES) and percentage of nonoverlapping data (PND). Of the 19 studies, 17 were group designs and 2 were single-subject design.   A total of 901 students with disabilities were represented in the studies.   Interventions in the studies were categorized as mnemonic strategies, cognitive strategies, direct instruction, activity based method, constant time delay, and computer assisted instruction.   All studies indicated large effect sizes for instructional techniques except the activity-based method.   Accepted interpretations of effect size with absolve values of 80 are considered large effect sizes (Cohen, 1988).

Literature Search Procedures

Data bases including PsychINFO, EBSCO Host, Education Resources Information Center (ERIC), Digital Dissertations, and InfoTrac OneFile were searched. Keywords used in the searches included combinations of: *keyword mnemonics, vocabulary instruction, mnemonic strategy, keyword method, language teaching, and vocabulary development*.   Relevant textbooks in special education were hand searched. In addition, an ancestry search of all obtained and reference lists was conducted. Finally, professionals familiar with mnemonic strategy were consulted.

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Criteria for Inclusion

This review includes studies that met the following criteria: (1) the study was published in a peer reviewed journal, (2) subjects in the studies were between middle grades and twelfth grade (with the exception of one study), (3) the population included an intervention design using some format of memory enhancing instruction, and (4) study addressed vocabulary instruction in some form.

Overall Characteristics

Initial searches retrieved 206 possible studies using mnemonics from the years 1985 to the present. When specifically addressing the above criteria for inclusion, eight studies remained. While some research related to mnemonics in general, this study intends to address the use of vocabulary instruction. Therefore many studies were eliminated on that premise.

Specific Research Most Relevant to the Topic

Difficulty with long-term memory, short-term memory and semantic memory is prevalent in students with learning disabilities (Mastropieri & Scruggs, 2007). These students have difficulty remembering information when performing other cognitive tasks as well as recalling information that they just read or heard (Hallahan & Kauffman, 2006). Mnemonics is one strategy that is helpful in the memorization process of content knowledge. Atkinson (1975), Mnemotechnics in Second Language Learning was the original study on the keyword method. Mastropieri and Scruggs (1998) described mnemonics strategies as systematic procedures for enhancing memory and assistance with encoding the new content information to ease in retrieval. Numerous research

studies demonstrate the efficacy of mnemonics in variety of setting to include science, social studies, and middle and high school settings.

For example, Mastropieri, Scruggs, and Weldon (1997) taught 19 learning disabled high school students the United States presidents a within-subjects research design. Students were taught the first sixteen presidents ranked by number for three weeks in the mnemonic condition. Students were given a keyword for the president and a pegword for the number of the presidency. For example, George Washington was president 1. . . . The keyword for Washington is washing and the pegword for 1 is bun (Mastropieri & Weldon, 1997 p. 14). During the control condition the second three weeks students were taught sixteen new presidents using traditional methods. Weekly tests revealed scores of 68.8% when using mnemonics and 32.0% when under the traditional treatment. The delayed posttest revealed scores of mnemonically taught material of 70.4% correct for name recall and 60.3% for number recall. In the traditional condition, scores were consistently lower with the students' score of 23.9% correct for name recall and 31.1% for number recall.

This study is but one that supports the body of research supporting the use of the mnemonic strategy for students with learning disabilities. Specific studies related to vocabulary instruction using the mnemonic strategy was addressed next.

Mnemonics

Keyword or mnemonic strategy involves two components, the keyword and the imagery link (Mastropieri, Scruggs, & Fulk, 1990). The keyword provides an acoustical cue that aids as a memory enhancement or association of the word. The imagery link

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provides a graphic tool that illustrates the keyword and unknown word pictorially. Both of these components together facilitate phonetic and imagery components to a memorization strategy that links to the targeted word and definition. With these two components the target vocabulary is recalled.

In a two experiment study, Mastropieri, Scruggs, and Levin (1985) taught 32 students with learning disabilities in grades 7, 8, and 9 in experiment one the keyword and mnemonic strategy, and 37 students with learning disabilities in grades 6, 7, and 8 in experiment two had to self generate a mnemonic. Students were stratified by grade level and randomly assigned to one of the treatment conditions. The mnemonic instruction condition was taught how to use the method of mnemonics using an interpretive picture of the vocabulary word and a word clue. The direct instruction condition (control) were taught words with pictures only in a drill and practices procedure. Both conditions used 16 low frequency words. Results indicated students in the mnemonic instruction condition outperformed the DI condition where or not pictures were used in the DI condition. Resulting effect sizes (ES) were large (e.g., experiment 1 = ES 2.52 and experiment 2 = ES 0.98).

Condus, Marshall, and Miller (1986) taught 64 learning disabled sixth grade students' vocabulary using a four group pretest/posttest design. 32 students with high-receptive and 32 students with low-receptive vocabularies were randomly assigned to one of four groups. In the four conditions, students were taught using, (a) keyword image, (b) picture context, (c) sentence experience context, and (d) control condition. The study consisted of 15 sessions over 3 days per week for 5 weeks with a minimum of 20 minutes

for each session.   A total of 50 vocabulary word were grouped in sets of 10 words and presented weekly.   In the keyword-image condition, students learned word meanings using a three step process: (a) phonetic link – learn keywords, (b) imagery link - content presented in black and white drawings, and (c) recall the keyword and picture when presented the target vocabulary word.   Results indicated that on average, students with high-receptive language scored higher in all conditions over low-receptive language. Overall students assigned to the keyword condition outperformed all other conditions across all four levels.   The findings in this study encourage the keyword mnemonic strategy and vocabulary knowledge acquisition for students with learning disabilities.

McLoone, Scruggs, Mastropieri, and Zucker (1986) taught 60 learning disabled, middle school students English and Italian vocabulary words using a two-group posttest only design, with students stratified by grade level and randomly assigned to one of two experimental conditions.   All students were assigned a specific condition, but both conditions learned to apply strategy independently.   In the mnemonic instruction condition, students were taught using, (a) generate their own keyword and picture independently during the transfer task.   In the directed rehearsal condition, students were taught using, (a) verbally state each word and definition and (b) apply to rehearsal strategy.   A 14-item definition recall test and a 10-item transfer test were administered to students as the posttest.   Results indicated that both conditions were equally effective in teaching students with disabilities vocabulary.   However, in the mnemonic instruction condition students scored significantly higher than in the directed rehearsal strategy on recall (ES = 3.13) and on transfer measures (ES = 2.98).

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Veit, Scruggs, and Mastropieri (1986) taught 64 learning disabled, middle school students dinosaur characteristics using a two group posttest only design. All students were assigned randomly to one of the two instructional conditions, mnemonic or direct questioning. In both conditions, students were taught three lessons using, (a) word parts of dinosaur names, (b) attributes of dinosaurs, and (c) extinction of dinosaurs. Lessons consisted of 10 minutes sessions for a total of three sessions. Results indicated that on a 14-item vocabulary recall, students in the mnemonic condition outperformed students in the direct questioning with a loose scoring vocabulary test (ES = 0.82) and vocabulary application test (ES = 0.81), however the difference was not significantly higher. The difference was seen in the mean score of students in the mnemonic condition which was significantly higher than the score of the directed questioning condition on both recall production (ES = 1.41) and identification test (ES = 2.07) in the one day follow up.

Mastropieri, Scruggs, and Fulk (1990) taught 25 learning disabled, middle school students concrete and abstract vocabulary words using a two-group design. Students were stratified by grade level and randomly assigned to either of the two experimental conditions, keyword mnemonic instruction vs. rehearsal condition (direct instruction). All students were exposed a 14-item definition recall test as the posttest. In keyword mnemonic condition students were taught 16 vocabulary words using a keyword and picture. The researcher presented each word with a description of the vocabulary word and visually with the mnemonic picture. Students in the rehearsal condition were taught the vocabulary words using a drill and practice technique. Results indicated that students in the mnemonic instruction condition scored higher effect sizes (ES = 2.80) in

definition recall and (ES = 1.80) in comprehension of the vocabulary. Overall the mnemonic instruction condition main effect was found for item type of production tests only, with students performing higher on concrete words.

Uberti, Scruggs, and Mastropieri (2003) taught 74 third grade teacher selected vocabulary words using a three-group design. Classes were assigned one of following treatment conditions – keyword, picture only, and definition only condition. The same teacher taught all three classes and varied materials as needed for each condition. All students were given a pre-test consisting of pre selected vocabulary words from the novel *June 29,* 1999 establishing a baseline. After the treatment a posttest was administered in the same format as the pretest with all students. Results indicated that students in the keyword treatment scored highest, then definition treatment followed by the picture treatment. Students with disabilities benefited greatly from the keyword treatment whereas their performance matched that of their nondisabled peers. Also, nondisabled students showed improved performance using the mnemonic treatment. Although this study is limited in to the practice of one teacher, the results support a larger body of research indicating the benefits of phonetic and imagery links with vocabulary.

In the final study, Terrill, Mastropieri, and Scruggs (2004) taught eight high school students with learning disabilities in a self-contained high school English classroom by alternating treatments each week. All students received both the keyword mnemonic condition and the nonmnemonic instruction condition. The sessions spanned six weeks with ten SAT examination possible vocabulary words per week. Students in the mnemonic condition were taught the target word with an illustration, with worksheets

and independent practice sheets prepared by the teacher.   The nonmnemonic condition

received the same words each week but only with worksheets and practice materials.

Results indicated that students in the mnemonic instruction condition scored 91.7%

correct compared to 48.8% correct for the nonmnemonic condition, a statistically

significant difference. Descriptive analysis of individual student scores revealed that all

students in the mnemonic condition scored higher than the nonmnemonic condition.

Summary

In summary, keyword and mnemonic strategies emphasis the ongoing importance

of explicit instruction in phonetic and imagery linking with promotion of definition recall

on vocabulary target words.   It seems paramount that students with learning disabilities

have difficulty acquiring new words from independent reading and explicit vocabulary

instruction.   As indicated from the plethora of research, the need for instruction that

explores acquisition and maintenance of word knowledge, processing of word

knowledge, and generalized word learning is relevant to teaching practices in vocabulary

instruction (Jitendra et al., 2004).   In addition, classroom practices and resources need to

be realistically instrumental to address the deficits in student learning and their equal

access to the curriculum in different age groups, specifically older students, and different

settings and content areas in secondary education.

<div align="center">

The Rationale for this Study

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This study contributed to and supported 25 years of mnemonic strategy research

by investigating the uniqueness of the high school English classroom on students with

learning disabilities and other students that struggle with comprehension and semantic

recall.   This is an area where research currently has a gap.   Therefore, this study

extended and expanded previous research in keyword mnemonics by extending the work

of Terrill, Scruggs, and Mastropieri (2004) with a larger population and focus.

Instruction was delivered by classroom teachers familiar with the specific set up of the

inclusion, team taught classroom with their own students and will address specifics to the

district and state mandated tests which evaluates student performance.

CHAPTER 3 **Method**

This section describes the research design of this study. The following sections include
descriptions of the research design, operational definitions, participants, materials,
dependent measures, and procedures. This study therefore, extended the work of Terrill,
Scruggs, and Mastropieri (2004) by investigating possible benefits of students when
taught vocabulary instruction using a keyword strategy in a high school English
classroom.

Research Design

A within-subjects crossover design was implemented in inclusion English
classrooms using mnemonic materials. First, an intervention was evaluated using two
conditions (mnemonic and traditional vocabulary instruction) by two types of students,
with disabilities and without disability. Second, students were surveyed at the end of the
treatment period with a follow up survey, given to gain insight into the students'
perspectives of the mnemonic strategy. This study intended to answer the following
research questions: (a) teaching S.A.T. vocabulary with or without the use of mnemonics
impact on learning in secondary inclusive English classes, (b) perceptions and strategic
learning of students from both conditions of instruction, (c) significant difference
between scores on vocabulary assessments for high school students taught S.A.T.
vocabulary words by direct instruction without keyword mnemonics and those taught by

direction instruction with keyword mnemonics, and (d) significant difference between student achievement for students with and without disabilities.

To answer these questions, all five classrooms were assigned to the treatment condition and assigned to the control condition using traditional teaching methods in a within-subjects crossover design.   This design helped lessen problems with attrition and provide stronger statistical power.

Within-subjects crossover designs have been used successfully with mnemonic strategy studies in a variety of content areas and grade levels including but not limited to Scruggs, Mastropieri, Levin (1985); Mastropieri and Scruggs (1988); Scruggs and Mastropieri (1989a, 1989b); Mastropieri and Scruggs (1989); Mastropieri, Scruggs, Bakken, Brigham (1990); Mastropieri, Scruggs, Whedon (1997); and Terrill, Scruggs, and Mastropieri (2004).

This design allowed for the elimination of random sampling with students in the same classroom (Scruggs & Mastropieri, 1989a).   All students received both treatment and control condition (mnemonic vs. traditional instruction) therefore acting as his or her own control.   Controlling for academic ability, age, grade or class differences are then avoided.   All four teachers provided instruction in both conditions.   By minimizing attrition, results will not hinder the study as a whole (Mastropieri and Scruggs, 1989; Mastropieri et al., 1997).

Definitions

A critical piece of I.D.E.A. in 1997, is the concept of "least restrictive environment" (Mastropieri & Scruggs, 2007), formerly the Education for all Handicapped Children Act in 1975, reauthorizations in 1983, 1986, 1990, 1997, and 2004. Mandates of the law require students with disabilities are to be educated with their general education peers. A continuum of services is investigated by educators in order to find the most appropriate placement for each child. There are differences in each state and local education agency (LEA) in what is offered. Programming consists of approximately seven placements on a spectrum of services an IEP team can choose from when designing the least restrictive environment. The level evaluated in this study consists at level three: general education classroom with instruction, co-teaching, or other services including resource room support (Heward, 2006; Mastropieri & Scruggs, 2007). Most students with disabilities at this level are in the general education classroom but with support from a special education teacher (Mastropieri & Scruggs, 2007).

The term used in the site for this study is "inclusion." An inclusion class was defined as a class with special education and general education students where the instruction is primarily the responsibility of the general education teacher (Mastropieri & Scruggs, 2007). Students may receive additional support from the special education teacher within the general education room and on rare occasions be taken to an alternative location for specific accommodations i.e. reading a test.

Participants and Setting

This study was conducted in a suburban public school district in a mid-Atlantic state with an academically, socio-economically diverse student population for the area. A total of five inclusion English classrooms grades tenth, eleventh, and twelfth participated in this study. Every effort was made to keep the classrooms in a naturalistic setting.

School

The school served approximately 1,700 students in ninth through twelfth grades with 140 faculty members. The school's population was made up of Asian or Pacific Islander (2.9%), African American (23%), Hispanic (8.3%), and white (62.8%) students. Of the total population, 129 students have I. E. P.s (7.7%), and 14.5% receive free/reduced meals. The school hosted a variety of academic programs including advanced placement and special education services for autism. The school's schedule was hybrid block, including a four by four block with 86 minutes per class and alternating days with 86 minutes of instruction. During the normal school year, where the study took place, students attended English either in the fall or spring semester, Monday through Friday. The students were assigned two teachers, one certified in English content and the other Special Education, in a team taught service delivery of instruction.

Teachers

The four teachers participating in the study included two general education teachers and two special education teachers. One teacher was male and three teachers

were female.   The first general education teacher has been teaching for eight years and earned two bachelor's degrees.   The second general education teacher has a master's degree and has been teaching for twenty years.   The first special education teacher has twenty years experience with six special education endorsements.   And the second special education teacher has been teaching for six years at the same school with a master's degree in education.   Both of these teams of teachers work closely together and collaboratively plan instruction on a daily/weekly basis.   The inclusion model utilized most frequently during instruction was the content teacher taught the material and the special education assisted all students, not specifically the ones with disabilities. This model is referred to as teach/assist. Therefore, all of the activities, assignments, and materials were the same for each class.   At this time, no teacher was participating in a degree program.

Students

Students enrolled in English participated in this study, 103 students in total, and 33 with known disabilities.   Demographic information was collected for each of the five classrooms, by teacher, and a total sample including race/ethnicity, disability status, and gender.   School identified disabilities were identified as 21 students with learning disability (LD), three students with emotional disturbance (ED), four students dually identified as LD/ED, and five students in other disability categories. No student received special education services for hearing or sight impairment. There were 70 students identified as general education. Of the total population, 60 students were male and 43 students were female. School data identified 57 (55.3%) students as Caucasian, 26

(25.2%) students as African American, 16 (15.5%) students as Hispanic, two (2%)

students as Asian, and two (2%) students as multi-racial.

Materials

The following section describes the materials used in the treatment and control

conditions for teachers and students.   First, the curriculum framework outlining the

English classroom was described.   Next, materials for teachers in both conditions are

described followed by the materials specifics in each of the two conditions.   Finally,

materials for students for both conditions, treatment and control, are described followed

by the materials specifics in each of the two conditions.

Curriculum Framework

Instructional materials common to both conditions included vocabulary words

from a commercial program entitled *Vocabulary Cartoons II S.A.T. Word Power.*   The

high school English curriculum follows a state mandated curriculum or Standards of

Learning (SOLs) in preparation for an end of course standardized test at the end of the

eleventh grade.   The previous high school English courses build up to this end of course

standardized test.   Additionally, students preparing for college entrance examinations,

traditionally take the S.A.T.   This program is a lexicon of frequently seen words on

national norm referenced tests.   Vocabulary instruction is also a key reading component

in state and national standards.   This study focused on (a) recognize and apply

specialized vocabulary, and (b) use specific revision strategies and adapt content,

vocabulary, voice, and tone to audience, purpose, and situation (adopted SOL standards

grades 10, 11, and 12).   The local school district provided a pacing guide that provides

guidelines for reading comprehension and vocabulary.

Teacher Materials

In order to preserve a naturalistic environment in the classroom, the teacher

created classroom activities as usual. This included the use of resource materials for

instruction to include the course textbook, applicable workbooks, and other school

designated materials for the course (reading, writing, or literature focused materials).

Training. Teachers were trained before the implementation of the study in a 75

minute training session. The training was held at the teacher's school after school

approximately two weeks prior to the study. The researcher went through the training

manual (see Appendices A, G, H) and discussed each section and requirements necessary

in each class. Items discussed were materials, students, implementation, questions,

access to researcher and observation and surveys. After the study began, the researcher

met briefly with each teacher before/after school to discussion pending questions and

progress.

Mnemonic condition.   Each week ten new S.A. T. words were introduced from

the commercial program purchased for the school for a total of four weeks (Appendix A).

The ten words were on overhead transparencies including the definition, part of speech,

auditory (rhyming) word association, a visual association in the form of a humorous

cartoon, and contextual sentences.   For example, to help students learn the content, — *fly*

bull is a linking word to help identify the vocabulary word *pliable.* A picture of a fox

telling a bull to try flying off a cliff with the sentence "A pliable bull convinced he can

fly" listed to demonstrate the keyword mnemonic strategy (Figure 1). Since pliable

means *easily persuaded or controlled, fly bull* was developed as the acoustic word, and

then that keyword interacted in a illustration of the bull to help students with the to-be-

remembered vocabulary word. Additionally, three contextual sentences were given to
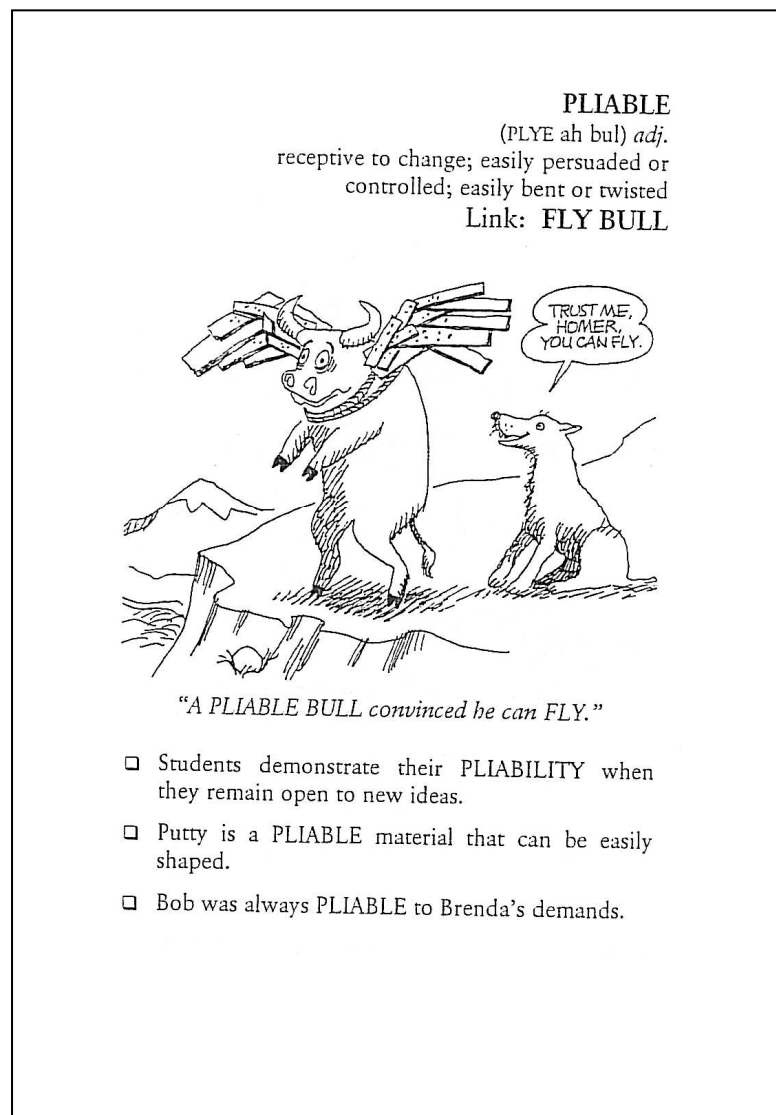
show the word in proper usage.

Figure 1. Mnemonic cartoon.

In addition, a folder containing the same information was included on note cards as described above. The cards were laminated with a hole punched in the corner. The cards for each week were attached using a metal ring.

Teachers was provided a electronic manual (on CD) with (a) a description of the study's purpose, (b) the benefits of the study for students (c) a description of the materials provided (d) a list of the vocabulary words to be covered, (e) a description of teacher responsibilities, (f) a description of the instructional procedures related to the study, (g) sets of transparencies of the mnemonic cards, (h) an example of the student record sheet, (i) a teacher record sheet, (j) a copy of the pre-test and post test, (k) a copy of the cumulative tests, and (l) a copy of the mnemonic condition student survey (Appendix A).

Traditional condition. A copy of all the vocabulary words with definitions were given on overhead transparencies, designated by week to be used for instruction (Appendix N-Q). No additional materials were provided to the teachers for the traditional condition.

All conditions. Teachers taught both mnemonic and traditional instructional condition in their classes and receive the same electronic manual. At the end of the electronic manual, a copy of the student survey was attached (Appendix J-M).

Student Materials

Mnemonic condition. Each student was given a composition notebook with which to record all vocabulary words, definitions, pictures, and perform all writing activities. The teachers kept these compositions in their classrooms for ease of access with the students in the different classes. Students were permitted to write in these

notebooks during mnemonic instruction or draw as they liked. No grades were recorded in these notebooks.

Traditional instruction condition.   Students were provided no materials other than the lessons written by their teacher.   Teachers did not allow students to use their composition notebooks during traditional instruction but encouraged them to record vocabulary in their class notebook that was assigned at the beginning of the semester.

Data Sources

The following section describes the dependent measures for this study. Measures included a pre-test, unit vocabulary tests, a posttest, and perception/satisfaction surveys. A sampling of the unit test is seen in Appendix R.

Mnemonic Condition Measures

The following section describes the measures present in the mnemonic instruction condition.   They included the measures described above as well as the student surveys.

Student perception/satisfaction survey.   Students in the mnemonic condition completed a survey (Appendix J-K) at the end of the instructional period addressing their perceptions about using the mnemonic materials and how this strategy could help them in the future.   The survey in Appendix K consisted of 22 questions consisting of: (a) two demographic questions; (b) eight open-ended questions; (c) nine questions based on a three-point Likert scale ranking positive perceptions and negative perceptions; and (d) three identification questions relating to specific vocabulary words learned.   Students were instructed to rank their opinion of the statement using the following stem options:

Agree=☺, Undecided=☺, Disagree=☹.   Questions focused on: (a) benefits of using the materials and (b) how materials could assist their learning in the future.

Traditional Instruction Condition Measures

The following section describes the measures present in the traditional instructional condition.   They included the same pre-test, unit tests, and post test as the mnemonic condition, but include different surveys.

Student perception/satisfaction survey.   Students in the control condition also completed a survey (Appendix L-M) addressing their perceptions about using the traditional materials.   The survey in Appendix L consisted of 13 questions consisting of: (a) two demographic questions; (b) five open-ended questions; (c) three questions based on a three-point Likert scale ranking positive perceptions and negative perceptions; and (d) three identification questions relating to specific vocabulary words learned.   Again, students were instructed to rank their opinion of the statement using the following stem options: Agree=☺, Undecided=☺, Disagree=☹.   Questions focused on: (a) benefits of using the materials in the traditional instruction and (b) how materials could assist their learning in the future.

Teacher Satisfaction Survey

At the end of the implementation of the study, each teacher was given a satisfaction survey. The survey included questions about their perceptions of the instruction process, mnemonic strategy, and uses for the future (Appendix I).

Procedures

This section describes the procedures followed in this study. These include descriptions

      of the protections of human participants and informed consent, procedure for all

      conditions, and condition-specific procedures.

Consent and Human Participants

      The George Mason University Institutional Review Board and the school district

reviewed and approved this study prior to implementation.   Informed consent and assent

was obtained from all teachers, students, and parent/guardians for each student

(Appendix B-D).

All Conditions

      Students were administered a pre-test during the first day of implementation and a

cumulative posttest within a week of the last day of implementation (Appendix W).

During the implementation period, teachers spent four weeks teaching a specific list of

forty S.A.T. vocabulary words.   These words were presented in groups of ten. Students

in both conditions received the same words each week however in two different formats.

      Students took weekly tests consisting of ten words that were then divided into two

units (Appendix R-U).   Students also took other quizzes and assessments as part of

instruction that was not be included in the data collected.   Teachers administered two

surveys to students at the end of the implementation period for that type of instruction

and given during normal classroom time (Appendix J-M).

Traditional Instruction Condition

Students participated in the above described lessons for both conditions. Teachers provided students with daily worksheets reviewing the ten vocabulary words taught or provided verbal discussion to review the vocabulary words and definitions. These worksheets were shown on an overhead or written on the board, and are similar to the work in a typical vocabulary workbook: matching words, repeating definitions, and putting vocabulary word in a fill in the blank sentence activities. At the end of the instructional period, the students took a survey addressing their perception of the traditional instruction condition (Appendix L-M).

Mnemonic Instruction Condition

Throughout the intervention, the teacher provided daily instruction as usual using the materials specifically provided for mnemonic instruction. After the pre-test and before beginning the intervention, students in the mnemonic instructional condition were given composition notebooks to record and track assignments with the mnemonic strategy. Each week the mnemonic instructional condition followed the same order of daily assignments for five days consecutively (Appendix A).

Day one. Ten new S.A.T. vocabulary words were introduced by the teacher. Students recorded in their composition notebook, the vocabulary word, the linking word, definition, and part of speech for each word. Teachers discussed how the linking word connected to the cartoon, definition, and how to pronounce the vocabulary word. For example, the teacher said something like, "Look at the cartoon and see how the lemonade is being poured from the pitcher. It cascades down in the direct stream imitating how a

waterfall can cascade.   The word cascade means 'resembling a waterfall. ' A sample

sentence is Rachel's hair formed a beautiful CASCADE down her back.' " Students then

created their own mnemonic for each vocabulary word and wrote an accompanying

sentence focusing on correct usage and understanding of the word. Not all words were

completed on day one so teachers had students write in their composition 2-3 words per

day. However, all words were introduced on day one of each instructional week.

Day two through four.   The teacher reviewed the ten vocabulary words for the

week by discussing the example cartoons, reviewing the pictures, linking words, and

definitions.   Students discussed their own drawings with the class and continued their

own drawings for the remaining words.

Day five.   Students were given a weekly quiz on day five to include all ten words

(Appendices R-U). The quiz was designed in two sections: (1) semantic recall of

vocabulary with definitions and (2) application of the words in contextual sentences in a

fill in the blank format.   At the end of the intervention, a posttest was given to all

students that represented four words from each instructional week.

Fidelity of Treatment

Logs were maintained on a daily basis by the non-instructional partner in the

inclusion team.   The amount of time spent each day in the lesson was recorded on a

checklist form (Appendix E-F).   The time spent presenting, discussing, recording and

any interruptions was included.   The only interruption of note was a snow day occurred

during the study. Students and teachers continued with normal activities when they

returned. Any deviations or interruptions from the schedule will also be recorded. None

were noted. Observational logs were not used as a timed analysis in this study but to insure that each step of instruction was carried out thoroughly.

Data Analysis

Statistical Measures

The results of the intervention were analyzed using the following statistical measures.

1. How does teaching S.A.T. vocabulary with or without the use of mnemonics impact learning on:

   a. All Students in secondary inclusive English classes

   b. Students with disabilities

   Data was entered into a two treatment order (mnemonic vs. traditional) by 2 category (students with and without disabilities) analysis of variance (ANOVA) with repeated measure on the unit variables.

2. What are the perceptions and strategic learning of students from both conditions of instruction?

   Survey data was evaluated using qualitative measures in coding.

3. Is there a significant difference between student achievement for students with and without disabilities?

   A 2 x 2 ANOVA was used to compare posttest scores.

4. What benefits do students discover when taught vocabulary instruction using a keyword strategy?

   Survey data was evaluated using qualitative measures

5. What benefits do teachers discover when teaching vocabulary with the keyword

   mnemonic strategy?

   Survey data was evaluated using qualitative measures

Limitations of the Study

The following limitations are taken into consideration for the study: (a) participants were limited to one semester of high school English with students enrolled in that particular semester, (b) the intervention was given at one school in three grade levels – tenth, eleventh, and twelfth grade, and (c) not all students that struggle in the area of reading were included due to class scheduling.

CHAPTER 4 **Results**

This chapter presents the results of the statistical and descriptive analyses. First, the results of the means of student performance on pretest are presented. Next, cumulative posttest results are presented by student category and instructional condition followed by unit vocabulary tests and item categorizations. Then, it is followed by descriptive analyses of responses on student satisfactory surveys. The chapter is complete with the scoring and results of teacher satisfaction survey and mini interviews.

Student Performance

Three research questions addressed the effects of mnemonic versus traditional instruction on academic performance in inclusive high school English classes. The first question looked at the impact of the specific treatment and sought to determine if there were differences in outcomes relative to three identified categories of students: non-disabled students, special education students and students in grades ten, eleven and twelve. The second question addressed effects of student achievement and determined statistical significance. Pretests precede the Unit vocabulary test scores (by unit) that are compared by condition and group proceeded by scoring and analysis of the posttest. Student performance by instructional condition was examined via weekly vocabulary tests designed by unit (two weekly tests were combined into one unit), a pretest and a posttest. The final two questions addressed student and teacher perceptions of mnemonic

strategies. Special education students were categorized into four subgroups: learning

disabilities (LD) N=21, emotional disabilities (ED) N=3, both LD/ED N=4 and other

disabilities N=5. Due to small sample sizes all students with disabilities were combined

into one category.

<div align="center">**Pretest Results**</div>

The pretest consisted of forty new vocabulary words based on SAT standards.

Students with disabilities scored a mean percentage of accuracy of 30.40% (*SD*= 12.06)

compared to their non-disabled peers with 40.23% (*SD*= 13.23). Students in grade ten

scored a mean percentage of accuracy of 36.92% (*SD*= 12.54) and whereas students in

grade eleven scored a mean percentage of accuracy of 33.86% (*SD*= 14.69) and grade

twelve scored 38.77% (*SD*= 13.76).

The mean scores for the pretest results are reported by student category and grade

level. Overall the total mean score for all students was 14.84(*SD*=5.44). The total for

students with disabilities scored a mean of 12.16 (*SD*=4.82) while their peers scored a

mean of 16.09 (*SD*=5.29). The mean score for students in the tenth grade was

14.77(*SD*=5.02). Students with disabilities in grade ten scored a mean of 12.69 (*SD*=5.01)

and students without disabilities scored a mean of 17.14 (*SD*=3.98). The mean score for

students in the eleventh grade was 13.55(*SD*=5.88). In grade eleven, students with

disabilities scored a mean of 11.63 (*SD*=3.96) while students without disabilities scored a

mean of 14.64 (*SD*=6.62). Finally, The mean score for students in the twelfth grade was

15.51(*SD*=5.51). Students with disabilities in grade twelve scored a mean of 11.57

(*SD*=5.83) and students without disabilities scored a mean of 16.24 (*SD*=5.20). Results of the mean scores are shown in table 1 below.

Table 1

Overall Pretest Mean Scores for Students

Grade Levels	Overall		Disabilities		Without disabilities	
	n	*M(SD)*	*n*	*M(SD)*	*n*	*M(SD)*
All Students	97	14.84(5.44)	31	12.16(4.82)	66	16.09(5.29)
10th	30	14.77(5.02)	16	12.69(5.00)	14	17.14(3.98)
11th	22	13.55(5.88)	8	11.63(3.96)	14	14.64(6.62)
12th	45	15.51(5.51)	7	11.57(5.82)	38	16.24(5.20)

The overall means of student performance in both treatments on the pretest at the beginning of the intervention period was compared. Students that received the mnemonic condition first scored a mean of 14.86 (*SD*=5.78) and students that received the traditional condition first scored a mean of 14.77(*SD*=5.02). Students with disabilities receiving the mnemonic treatment first scored a mean of 11.60 (*SD*= 4.73) compared to their non-disabled peers with 15.86 (*SD*= 5.75). Students with disabilities receiving traditional treatment first scored a mean of 12.69 (*SD*= 5.00) compared to their non-disabled peers with 17.14 (*SD*= 3.98). See Table 2.

Table 2

Pretest Scores by Treatment Order and Disability Category

	Mnemonic 1st Traditional 2nd			Traditional 1st Mnemonic 2nd		
	n	*M*	*SD*	*n*	*M*	*SD*
Overall Pretest Scores	64	14.86	5.78	30	14.77	5.02
With Disabilities	15	11.60	4.73	16	12.69	5.00
Without Disabilities	49	15.86	5.75	14	17.14	3.98

Cumulative Posttest Scoring

The cumulative posttest was administered after the unit two vocabulary test as a delayed recall test. This test was given to students within several days of the unit two test. An answer key consisting of a bubbled scantron sheets with a, b, c, d, and e choices with the correct answers was used to score the posttest. Scantron sheets were provided to all students whereas bubbles were indicated on the appropriate choice. Scantron sheets then were run through a computer for scoring. The raw score used for analysis was the number of correct answers. Since the nature of the scantron process of scoring did not allow for variance of correct answers there was 100% reliability on the scoring. Next, each vocabulary word on the posttest was determined as an individual unit of measure for analysis as well as the total scored correct.

Cumulative Posttest Results

To explore effects of instruction on the delayed cumulative posttest, data are presented as a representation of specific vocabulary words that were presented during the instruction in each of the treatment conditions, mnemonic and traditional instruction.

Students were given the delayed cumulative posttest at the end of the treatment period

with four sample words from each week of instruction for a total of sixteen words total.

Therefore scores represented are out of possible sixteen correct. Students without

disabilities receiving mnemonic condition first scored a mean percentage of accuracy of

75% (*SD*=14.52) compared with traditional condition with 73% (*SD*=11.01) of accuracy.

Students with disabilities receiving mnemonic condition first scored a mean percentage

of accuracy of 56% (*SD*=16.61) compared to 54% correct (*SD*=17.60) when receiving

traditional instruction.

Out of a possible score of eight for each treatment condition, students without

disabilities achieved a mean score of 5.58 (*SD*=1.48) on vocabulary words presented

mnemonically and 6.37 (*SD*=1.71) on vocabulary words presented in the traditional

format. Students with disabilities achieved a mean of 4.83 (*SD*=1.98) on vocabulary

words presented mnemonically and 4.16 (*SD*=2.02) on vocabulary words presented in the

traditional format.

Table 3

Cumulative Posttest Scores (Standard Deviations) by Category

	Mnemonic Instruction			Traditional Instruction		
	Mean	*SD*	*n*	*Mean*	*SD*	*n*
With Disabilities	4.83	1.98	30	4.16	2.02	30
Without disabilities	5.58	1.48	62	6.37	1.71	62

Mean scores for total post test for students with and without disabilities are in

Table 3. These data were entered into a two group (students with disabilities vs. students

without disabilities) by two condition (mnemonic vs. traditional instruction) analysis of

variance (ANOVA), with repeated measures on the condition variable, since all students

received both treatments. The results of the ANOVA yielded a significant effect for

group, $F(1,90) = 31.40$, $p = .000$, and group by condition interaction, $F(1,90) = 6.58$, $p =$

$.012$. The main effect for condition was not statistically significant, $F(1, 90) = .05$, $p =$

$.828$. Students without disabilities outperformed students with disabilities, while no

statistically meaningful difference was observed across conditions. However, the group

by condition interaction (see Figure 2) indicated that students with disabilities scored

higher with mnemonic instruction, while students without disabilities scored lower.
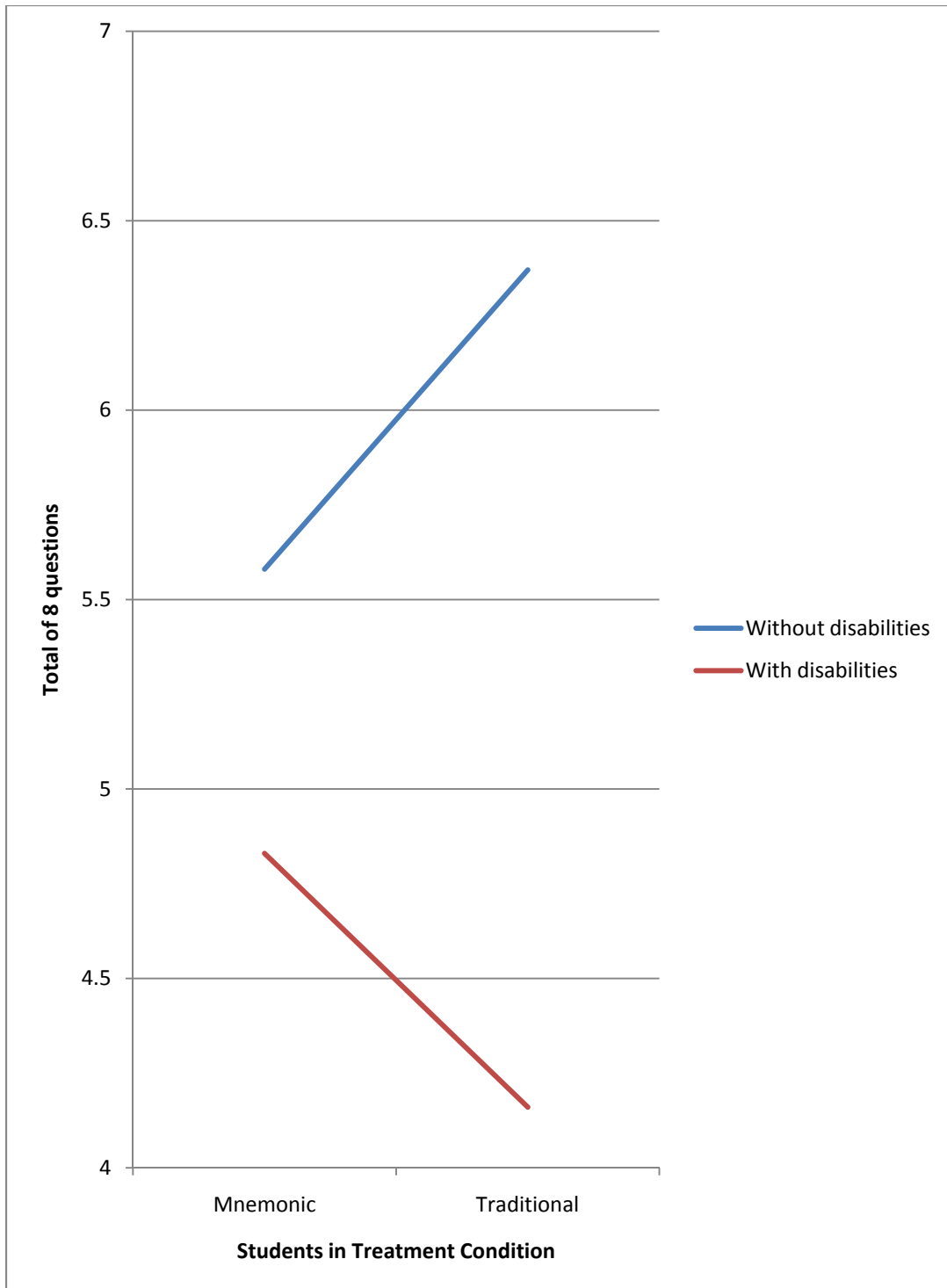
Figure 2. Mean scores on cumulative posttest by treatment condition.

Unit Test Scoring

Answer keys prepared by the researcher and approved by the teachers consisted of a weekly list of ten vocabulary words presented to the students during the weekly instructional period. Each two week period was combined into one unit totally two units – Unit One (weeks one and two) and Unit Two (weeks three and four). Student responses were initially scored by the researcher using an identical match to the semantic recalls provided – correct or incorrect. For example, to receive a correct answer for the term "diffident" a student had to state that the semantic recall *timid, lacking confidence*. Responses that deviated slightly from the agreed upon answer key but were recognizable to some level of accuracy according to the researcher's knowledge of the content were discussed with the teachers and scored according to a mutually agreed upon consensus, whereas there was 100% agreed as to whether the answer was correct or incorrect. The rubric used listed the exact semantic recalls from the materials presented to the students. When an answer seemed to be accurate but not exact, teachers where consulted until agreement was met. The application factor answers were given in a fill-in-the-blank format, either the vocabulary word was correct or incorrect. A second party blind to the instructional condition scored 10% of the vocabulary tests to establish a less than 1% margin of error.

Unit Test Results

Each unit test contained forty questions, twenty questions in each of the two categories, semantic recall and application of words. Students with disabilities scored a mean percentage of accuracy of 68% (*SD*= 25.12) in mnemonic condition compared to

84% (*SD*= 19.22) in traditional condition for semantic recall questions. Then on the application of words questions, students with disabilities scored a mean percentage of accuracy of 45% (*SD*= 22.04) in mnemonic condition compared to 67% (*SD*= 21.84) in traditional condition. Their non-disabled peers scored a mean percentage of accuracy of 88% (*SD*= 17.00) in mnemonic condition compared to 95% (*SD*= 10.82) in traditional condition for semantic recall questions. Then on the application of words questions, students without disabilities scored a mean percentage of accuracy of 62% (*SD*= 22.61) in mnemonic condition compared to 86% (*SD*= 15.30) in traditional condition. Vocabulary unit test results are presented next by student category.

By Student Category

Mean scores for total unit test scores for students with and without disabilities are in Table 4. Data were totaled for mnemonic instruction and compared with total unit tests from traditional instruction. On the total for mnemonic instruction on the unit test, students with disabilities scored a mean of 22.44 (*SD*= 8.19) while their non-disabled peers obtained a mean score of 29.94 (*SD*=7.09). Again, on the total for traditional instruction on the unit test, students with disabilities obtained means of 30.28 (*SD*=7.41) while their non-disabled peers obtained a mean score of 36.10 (*SD*=4.68).

Table 4

Vocabulary Unit Test Scores by Student Category

	With Disabilities			Without Disabilities		
	M	*SD*	*n*	*M*	*SD*	*n*
Instruction Condition			32			66
Mnemonic	22.44	8.19		29.94	7.09	
Traditional	30.28	7.41		36.10	4.68	

These data were entered into a two group (students with disabilities vs. students without disabilities) by two condition (mnemonic vs. traditional instruction) analysis of variance (ANOVA), with repeated measures on the condition variable, since all students received both treatments. The results of the ANOVA yielded a significant effect for group, $F(1,96) = 28.76$, $p = .000$ and for condition $F(1,96) = 96.28$, $p = .000$ but the group by condition interaction was not significant, $F(1,96) = 1.41$, $p = .24$. Students without disabilities outperformed students with disabilities, and students obtained higher scores on traditionally instructed items than mnemonically instructed items on unit tests (see Figure 3).
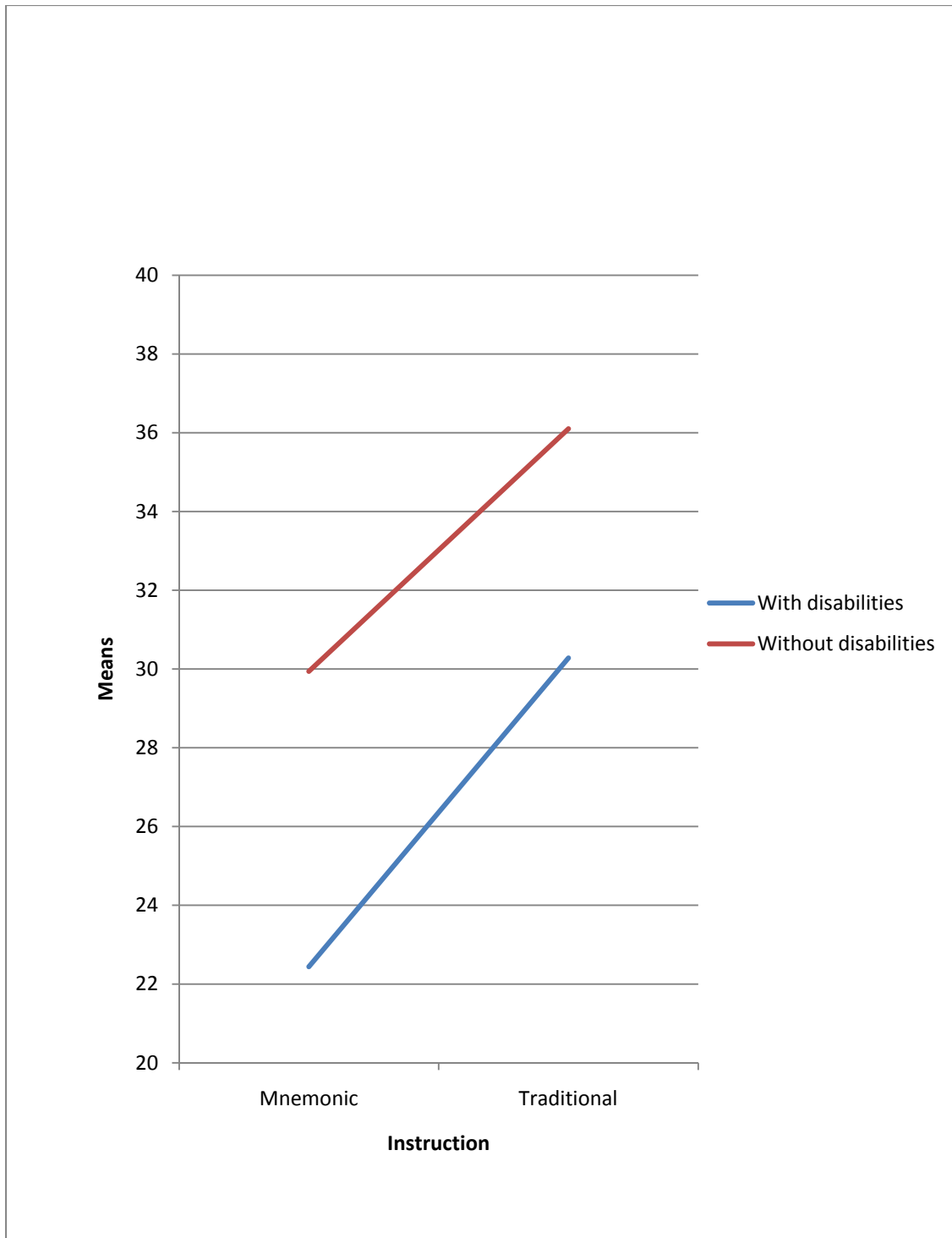
Figure 3. Mean scores for unit tests comparing mnemonic vs. traditional instruction.

By Item Type

Data were analyzed by two item types, semantic recall and application, as

presented in table 5. Students without disabilities obtained means of 18.01 (*SD*=3.09) on

production of semantic recall questions and 13.91 (*SD*=4.91) on application of word

questions. Students with disabilities obtained means of 15.33 (*SD*=4.44) on production of

semantic recall questions and 11.91 (*SD*=4.13) on application of word questions.

Respectively, students without disabilities alternated to traditional instruction with a

mean score of 18.51 (*SD*=2.72) on production of semantic recall questions and a mean

score of 15.81 (*SD*=3.98) on application of word questions. Their peers with disabilities

obtained mean scores of 15.03 (*SD*=5.10) on production of semantic recall questions and

10.44 (*SD*=5.55) on application of word questions with the traditional instruction. A *t*-

test showed no difference across item type therefore no further analysis was

administered.

Table 5

Vocabulary Test Scores (Standard Deviations) by Item Type

	Mnemonic Mean(*SD*)	*n*	Traditional Mean(*SD*)	*n*
*Students w/out Dis.**				
Semantic recall	18.01 (3.09)	67	18.51 (2.72)	68
Application	13.91 (4.91)	67	15.81 (3.98)	68
*Students with Dis.**				
Semantic recall	15.33 (4.44)	33	15.03 (5.10)	32
Application	11.91 (4.13)	33	10.44 (5.55)	32

*Dis. = Disabilities

Supplemental Analysis

This section presents the results of the supplemental analysis by student grade level. Student grade level was analyzed on cumulative posttest, unit test and item type (semantic recall and application).

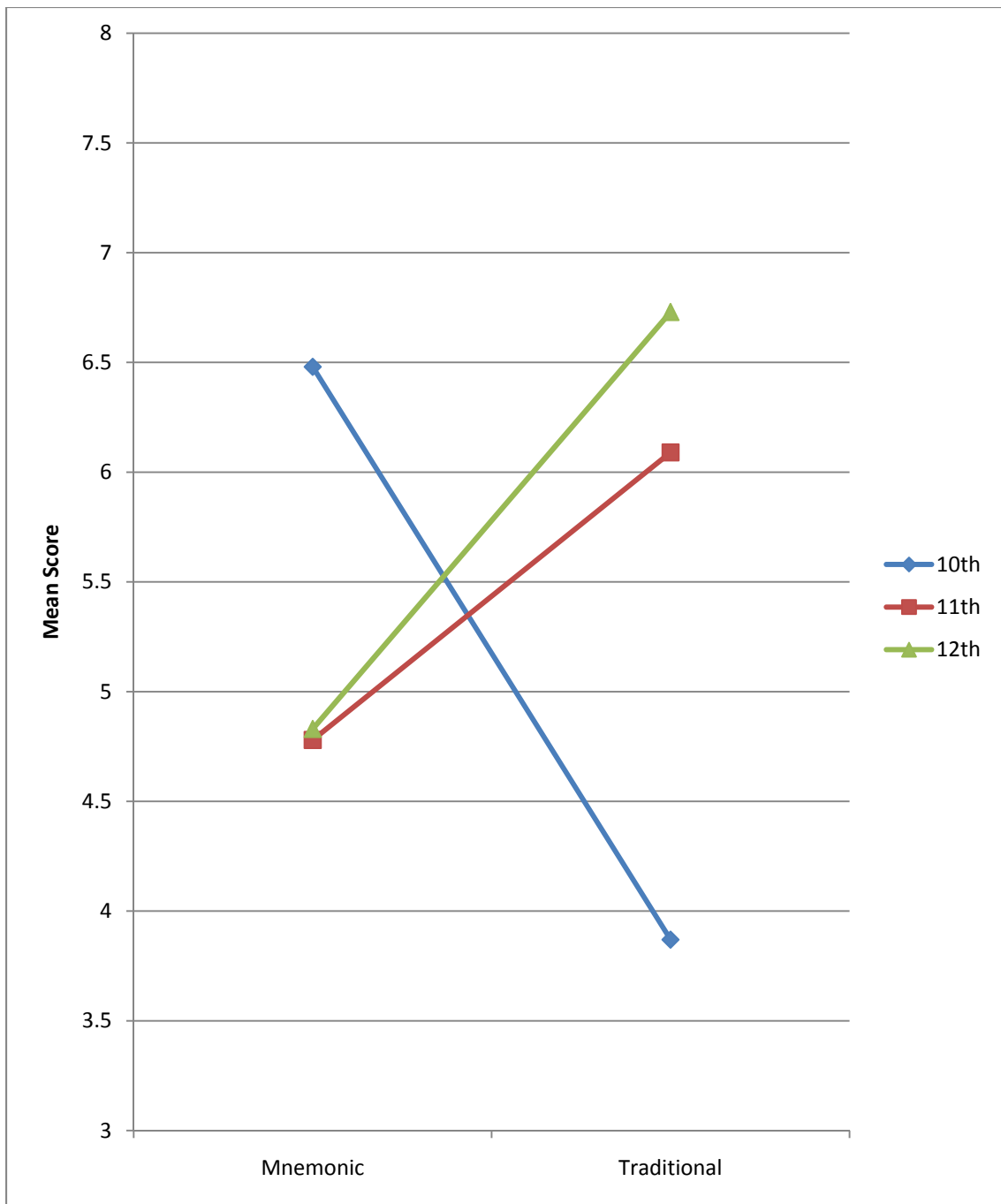**Cumulative Posttest by Grade Level**

Further analysis on cumulative posttest scores were explored by student grade level. As stated previously, out of a possible score of eight for each instructional treatment (eight vocabulary words from mnemonic condition and eight from the traditional condition), 10th grade students achieved a mean score of 6.48 ($SD=1.62$) on vocabulary words presented mnemonically and 3.87 ($SD=1.63$) on vocabulary words presented in the traditional format, 11th grade students achieved a mean score of 4.78 ($SD=1.54$) on vocabulary words presented mnemonically and 6.09 ($SD=1.81$) on vocabulary words presented in the traditional format, and 12th grade students achieved a mean score of 4.83 ($SD=1.43$) on vocabulary words presented mnemonically and 6.73 ($SD=1.60$) on vocabulary words presented in the traditional format. Data are presented in Table 6.

Table 6

Grade Level Cumulative Posttest Scores (Standard Deviations) by Category

	Instructional Condition					
	Mnemonic			Traditional		
	Mean	*SD*	*n*	*Mean*	*SD*	*n*
Grade Level						
10th	6.48	1.62	29	3.87	1.63	30
11th	4.78	1.54	23	6.09	1.81	23
12th	4.83	1.43	40	6.73	1.60	40

Upon further investigation these data were entered into a three group (grade 10,

11 and 12) by two condition (mnemonic vs. traditional instruction) analysis of variance

(ANOVA), with repeated measures on the condition variable, since all students received

both treatments. The results of the ANOVA yielded no significant effect for group,

$F(1,89) = 6.57$, $p = .174$ or by the group by condition interaction, $F(1,89) = 1.04$, $p = .311$

but significance for condition $F(2,89) = 67.16$, $p = .000$. Descriptive differences were

found by grade level whereas students in grade level ten obtained higher scores on

mnemonically instructed items but students in grades eleven and twelve scored higher on

traditionally instructed items on posttest (see Figure 4).

Figure 4. Mean scores by cumulative posttest by grade level.

Unit Test by Grade Level

Analysis on unit test scores was also explored by student grade level as shown in table 7. As stated previously, a total score on the unit test measure consisted of a possible score of forty. Tenth grade students achieved a mean score of 23.70 (SD=8.05) on vocabulary words presented mnemonically and 33.16 (SD=6.87) on vocabulary words presented in the traditional format, 11th grade students achieved a mean score of 24.57 (SD=7.72) on vocabulary words presented mnemonically and 32.83 (SD=6.38) on vocabulary words presented in the traditional format, and 12th grade students achieved a mean score of 31.41 (SD=6.73) on vocabulary words presented mnemonically and 35.78 (SD=5.48) on vocabulary words presented in the traditional format.

Table 7

Grade Level Unit Test Scores (Standard Deviations) by Category

	Instructional Condition					
	Mnemonic			Traditional		
	Mean	*SD*	*n*	*Mean*	*SD*	*n*
Grade Level						
10th	23.70	8.05	30	33.16	6.87	31
11th	24.57	7.72	23	32.83	6.38	24
12th	31.41	6.73	46	35.78	5.48	46

Upon further investigation these data were entered into a three group (grade 10, 11 and 12) by two condition (mnemonic vs. traditional instruction) analysis of variance (ANOVA), with repeated measures on the condition variable, since all students received both treatments. The results of the ANOVA yielded a significant effect for group, $F(1,95)$ = 8.59, p = .000 and for condition $F(2,95)$ = 6.98, p =.001 and the group by condition

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interaction was also significant, $F(1,95) = 121.64, p = .000$. Students in all three grade

levels obtained higher scores on traditionally instructed items than mnemonically

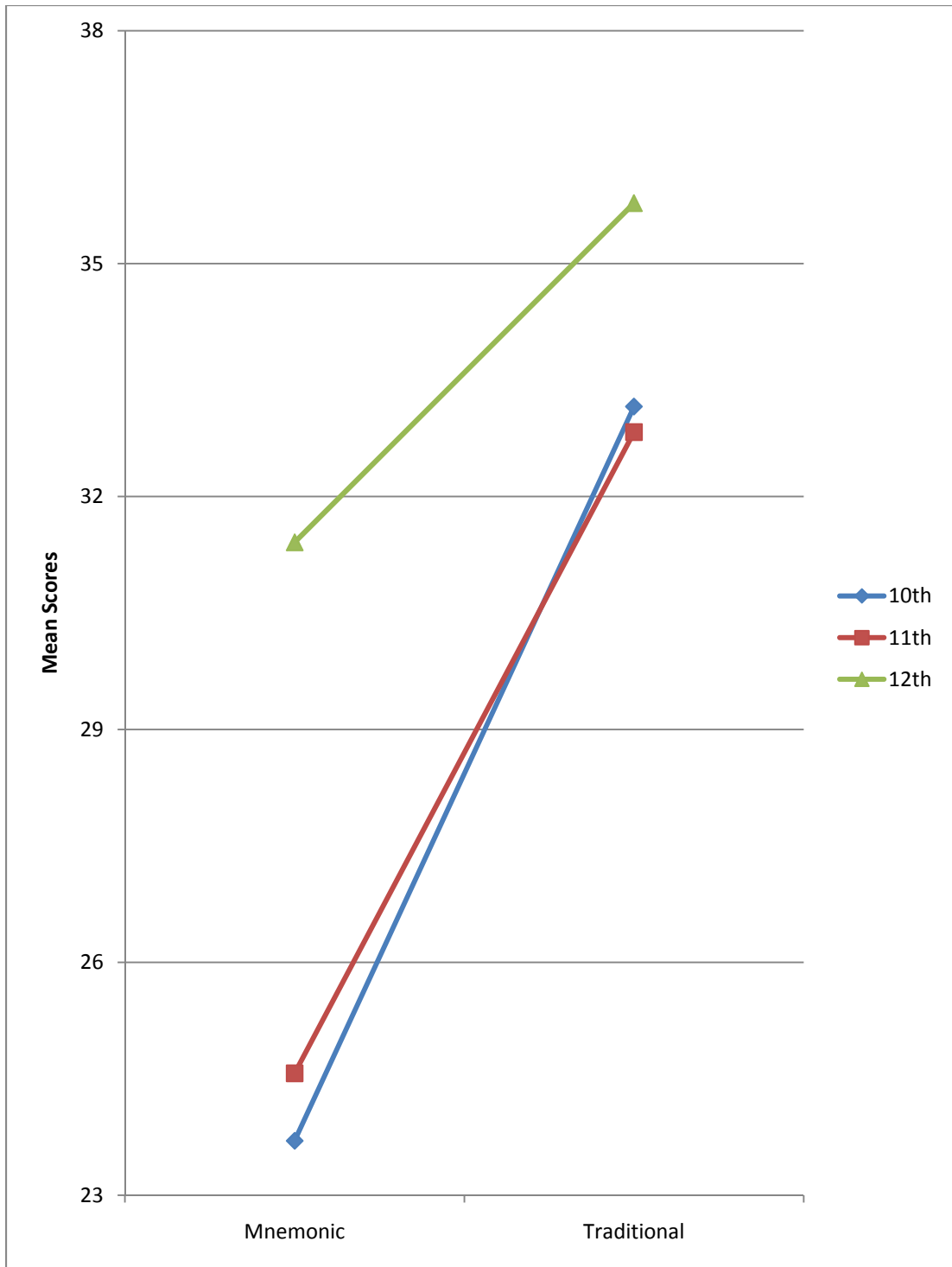instructed items on unit test (see Figure 5).

Figure 5. Mean scores on unit test by grade level.

By Item Type by Grade Level

Results by unit test are reported next based on specific item type. The unit test had two specific measures, semantic recall and application of words. Each measure consisted of a possible score of twenty. Vocabulary unit test results for 10th grade who received traditional instruction obtained a mean of 15.10 (SD=4.94) on semantic recall and a mean of 8.60 (SD=4.17) on application. When alternating to the mnemonic condition, 10th grade students who received traditional instruction obtained a mean of 18.00 (SD=2.81) on semantic recall and a mean of 15.16 (SD=4.71) on application.

In the 11th grade, those who received mnemonic instruction obtained a mean of 14.70 (SD=4.55) on semantic recall and a mean of 9.87 (SD=3.95) on application. When alternating to the traditional condition, 11th grade students obtained a mean of 17.38 (SD=3.40) on semantic recall and a mean of 15.46 (SD=3.57) on application.

Students in the 12th grade those who received mnemonic instruction obtained a mean of 17.76 (SD=3.50) on semantic recall and a mean of 13.65 (SD=4.31) on application. When alternating to the traditional condition, 12th grade students obtained a mean of 18.91 (SD=2.71) on semantic recall and a mean of 16.96 (SD=3.42) on application. Results are shown in table 8 below.

Table 8

Unit Test Scores (Standard Deviations) by Item Type

Grade	10 Mean(*SD*)	*n*	11 Mean(*SD*)	*n*	12 Mean(*SD*)	*n*
Mnemonic						
Semantic recall	18.00 (2.81)	31	14.70 (4.55)	23	17.76 (3.50)	46
Application	15.16 (4.71)		9.87 (3.95)		13.65 (4.31)	
Traditional						
Semantic recall	15.10 (4.94)	30	17.38 (3.40)	24	18.91 (2.71)	46
Application	8.60 (4.17)		15.46 (3.56)		16.96 (3.41)	

Data were entered into a three group (grade 10, 11 and 12) by two condition (mnemonic vs. traditional instruction) analysis of variance (ANOVA), with repeated measures on the condition variable for semantic recall factor. The results of the ANOVA yielded a significant effect for condition $F(2,95) = 115.58$, $p = .000$ and group by condition interaction, $F(1,95) = 2776.64$, $p = .000$. The main effect for group was not statistically significant, $F(1,95) = 4.462$, $p = .454$. Students in 10th grade obtained higher scores during mnemonic instruction for items on semantic recall (see Figure 6).
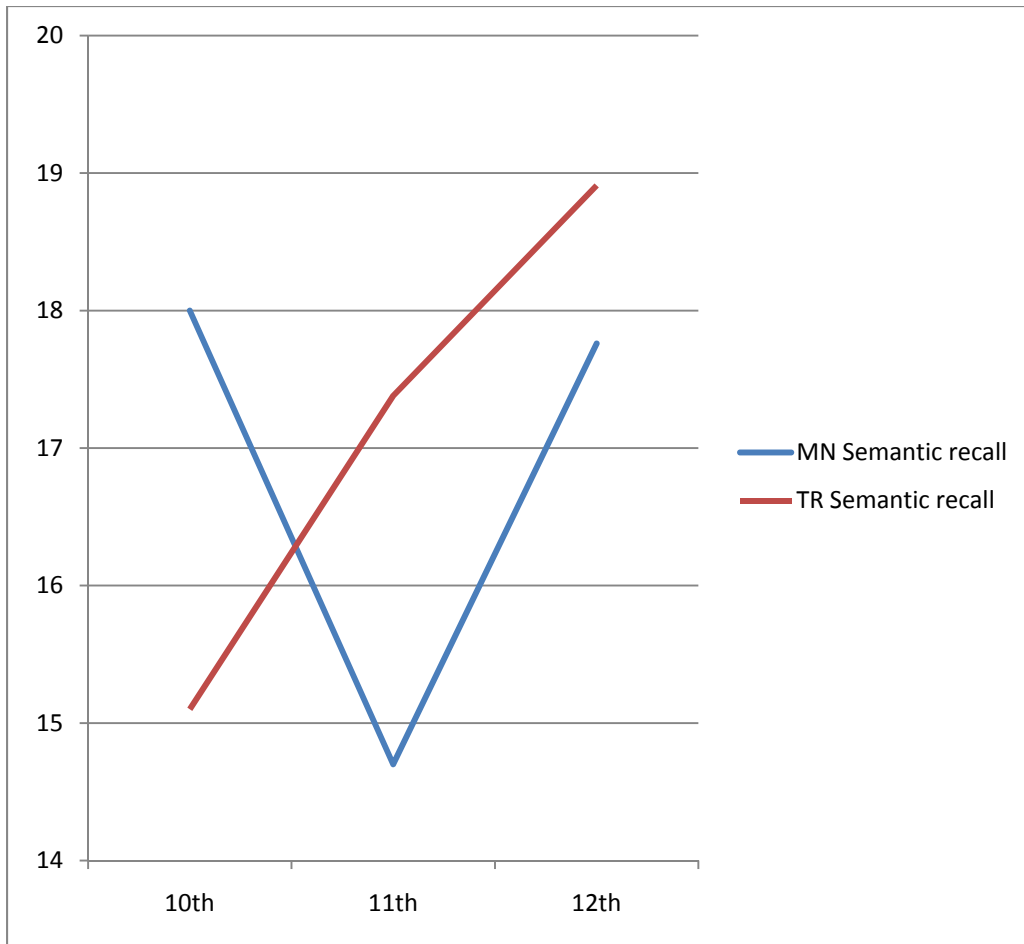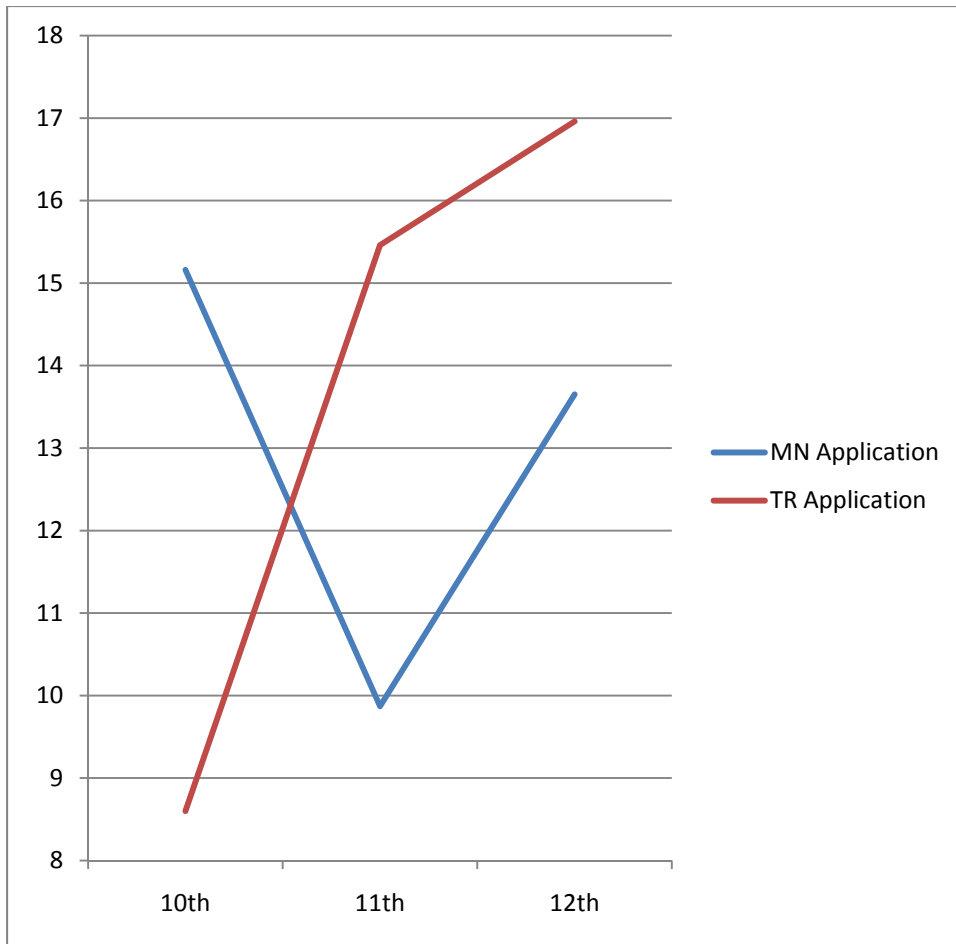
Figure 6. Mnemonic vs. traditional instruction for semantic recall factor.

Data were entered into a three group (grade 10, 11 and 12) by two condition (mnemonic vs. traditional instruction) analysis of variance (ANOVA), with repeated measures on the condition variable for application factor. The results of the ANOVA yielded a significant effect for condition $F(2,95) = 90.534$, $p = .000$ and group by condition interaction, $F(1,95) = 1209.80$, $p = .000$. The main effect for group was not statistically significant, $F(1,95) = 3.808$, $p = .054$. Students in 10th grade obtained higher scores during mnemonic instruction for items on application recall in Figure 7.

Figure 7. Mnemonic vs. traditional instruction for application factor.

Satisfaction Surveys

This section presents the results of the student satisfaction surveys given to all students after the mnemonic and traditional periods, and to the teachers at the end of the study. Students were asked to assess their level of agreement with strategy use. Teachers were also asked to comment on strategy use.

Student Satisfaction Surveys: Scoring

Satisfaction surveys were scored by the researcher and a university student familiar with the scoring procedures and materials. Tallies were used to count the

responses to each question from the Likert-type scale with three levels (Agree=☺,

Undecided=☺, Disagree=☹). The Likert-type questions were coded and entered into

SPSS. Clerical reliability was established at 100% by a clerical assistant unfamiliar with

the study that matched and verified the accuracy of the data entry into SPSS.

Student Satisfaction Surveys: Results

All students were asked their opinions on study habits and level of comfort in

English classes. Table 9 describes the frequencies for student answers as a percentage.

Table 9

Frequency Responses
Student Opinions of English and Study Habits by Condition

	Condition					
	Mnemonic			Traditional		
	1☹	2☺	3☺	1☹	2☺	3☺
	%	%	%	%	%	%
I liked English before Total	15.5	42.7	34.0	14.6	38.8	31.1
I like English now Total	13.6	29.1	48.5	5.8	32.0	47.6
I study before tests Total	10.7	31.1	49.5	10.7	27.2	47.6
N	95	94	94	87	88	88

(1=disagree☹   2=undecided☺   3=agree☺)

Data were further analyzed by student category for the same three survey

questions. In the mnemonic condition, when asked if students liked English before

students without disabilities scored a mean of 2.16 (*SD*= .739) and students with

disabilities scored a mean of 2.29 (*SD*=.643). In the traditional condition, when asked if

they liked English before students without disabilities scored a mean of 2.17 (*SD*= .679)

and students with disabilities scored a mean of 2.24 (*SD*=.786). In the mnemonic

condition, when asked if students liked English now students without disabilities scored a

mean of 2.37 (*SD*= .745) and students with disabilities scored a mean of 2.40 (*SD*=.724).

In the traditional condition, when asked if they liked English now students without

disabilities scored a mean of 2.52 (*SD*= .599) and students with disabilities scored a mean

of 2.43 (*SD*=.679). And the final question asked if students study before tests, in the

mnemonic condition students without disabilities scored a mean of 2.41 (*SD*= .733) and

students with disabilities scored a mean of 2.45 (*SD*=.624). In the traditional condition,

when asked if they study for tests students without disabilities scored a mean of 2.40

(*SD*= .724) and students with disabilities scored a mean of 2.50 (*SD*=.682).
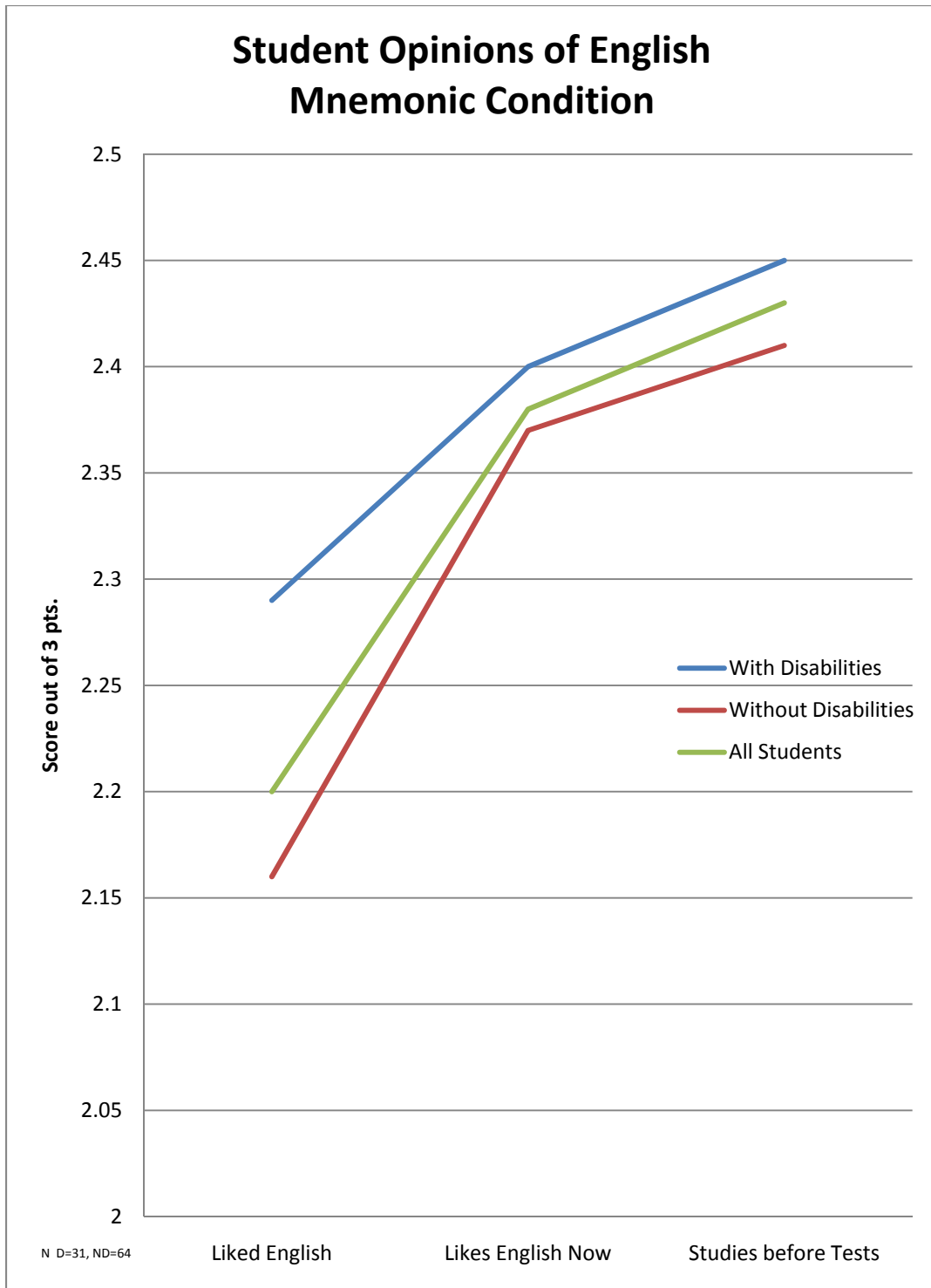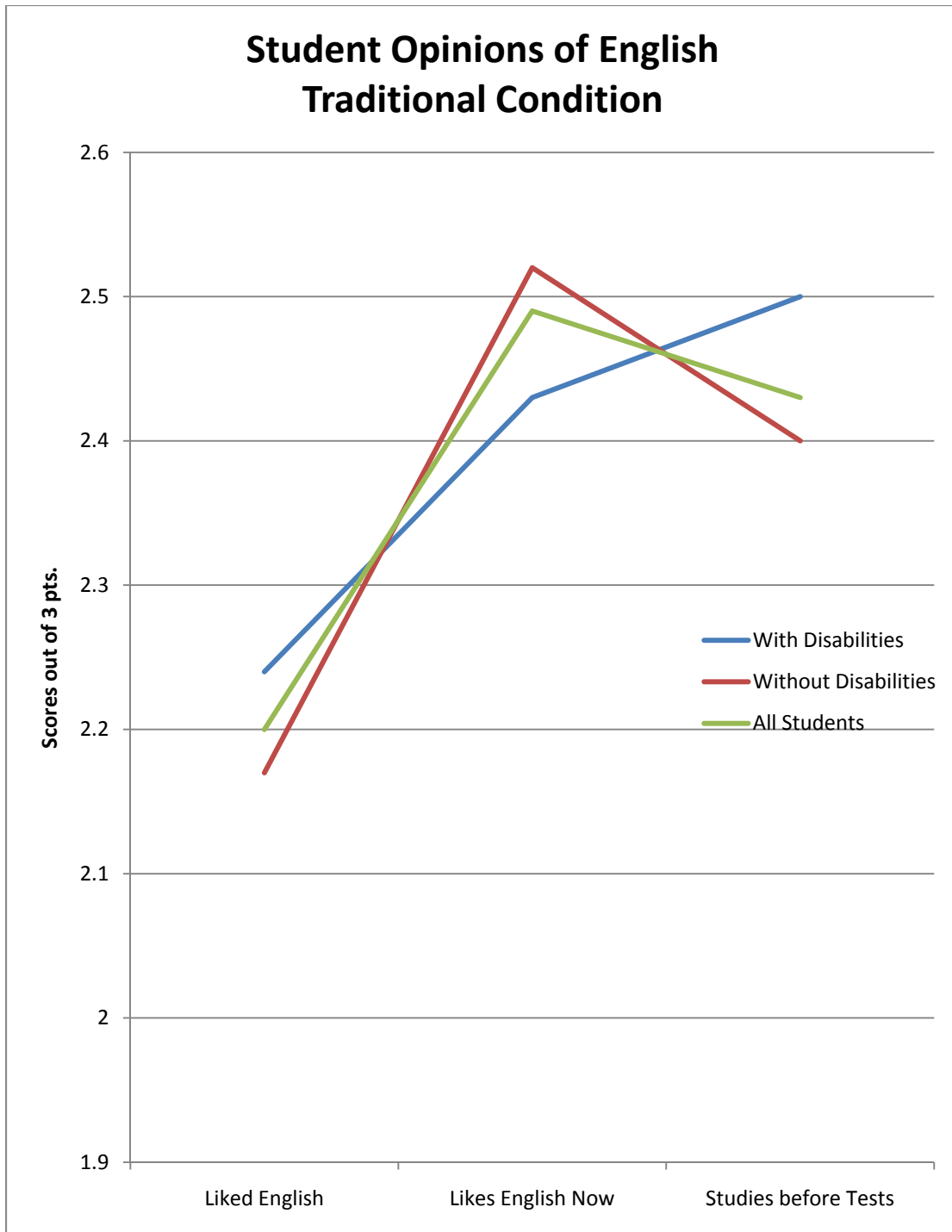
Figure 8. Student responses in mnemonic condition questions.

Figure 9. Student responses on traditional condition questions.

Students in the mnemonic condition were asked an additional six Likert-type questions pertaining to the specific strategy and use of in the mnemonic condition. Table 11 describes the mean responses for disabled and students without disabilities with the highest possible score of three points (1pt. =disagree, 2 pts.=undecided, 3 pts.=agree).

When asked if they liked the mnemonic cartoons students without disabilities scored a mean of 2.21 (SD= .792) and students with disabilities scored a mean of 2.36 (SD=.780). When asked if the mnemonic cartoons were easy to use students without disabilities scored a mean of 2.44 (SD =.692) and students with disabilities scored a mean of 2.43 (SD=.790). When asked if the mnemonic cartoons helped to learn vocabulary, students without disabilities scored a mean of 2.23 (SD=.798) and students with disabilities scored a mean of 2.32 (SD=.819). When asked if the mnemonic cartoons helped them do better on vocabulary quizzes, students without disabilities scored a mean of 2.15 (SD= .786) and students with disabilities scored a mean of 2.46 (SD=.744).

When asked if they remembered the keyword and cartoon pictures when taking my vocabulary quizzes, students without disabilities scored a mean of 2.16 (SD= .814) and students with disabilities scored a mean of 2.32 (SD=.863). Finally, when students were asked if similar mnemonic cartoons could be used in other classes, students without disabilities scored a mean of 2.11 (SD= .755) and students with disabilities scored a mean of 2.11 (SD=.737). Results are shown in table 10.

Table 10

Embedded Strategy Answers for All Students (Mnemonic Condition)

|	With Dis.	Without Dis.
I liked using the mnemonic cartoons.	2.36	2.21
The mnemonic cartoons were easy to use.	2.43	2.44
The mnemonic cartoons helped me learn the new vocabulary.	2.32	2.23
The mnemonic cartoons helped me do better on my vocabulary quizzes.	2.46	2.15
I remembered the keyword and cartoon picture when taking my vocabulary quiz.	2.32	2.16
Similar mnemonic cartoons could be used in other classes.	2.11	2.11
n	*62*	*28*
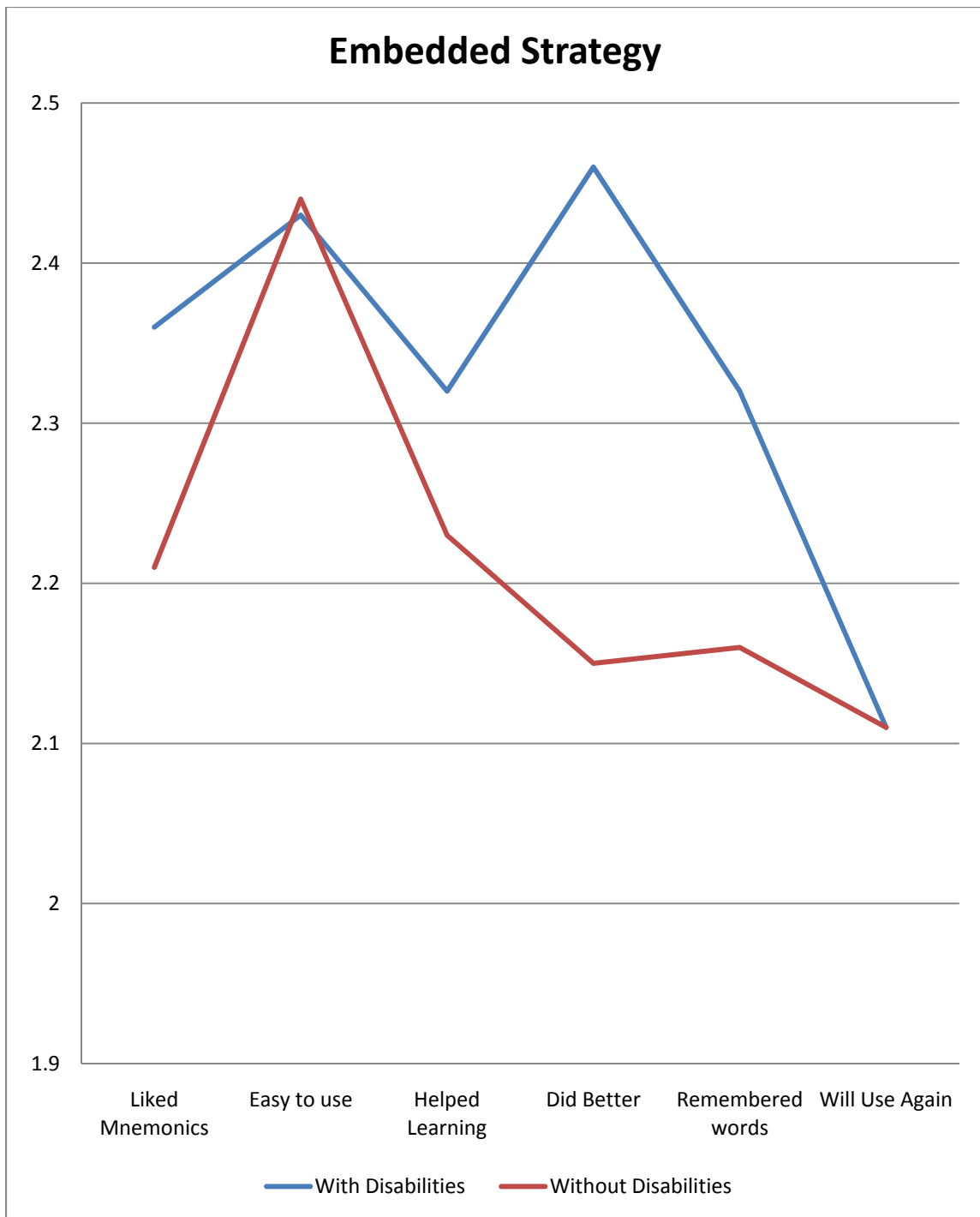
Figure 10. Responses to survey questions by student category.

The majority of responses indicated an agreed opinion on using mnemonic strategy and the application of the mnemonics with cartoons. However, the students with disabilities consistently scored higher than their non-disabled peers across all categories except one, using mnemonics in other similar areas. The largest difference between disabled and non-disabled student responses was seen in the survey question "*The mnemonic cartoons helped me do better on my vocabulary quizzes.*" The open-ended responses follow with additional data on the students responses to how mnemonics can benefit their instructional process.

Student Satisfaction Surveys: Open-ended Responses

Initially, the open ended questions were treated as transcripts and coded for similar themes in student answers based on coding for Grounded Theory by Glaser and Strauss (Allan, 2003). Glaser and Strauss (1967) insisted that preconceived ideas should not be forced on the data by looking for evidence to support established ideas. Key point coding identifies key points rather than individual words and allowing concepts to emerge. Opened ended questions were transcribed then coded for similar themes from the key points in the student responses. Some students provided specific answers and some students left the question unanswered. If students provided more than one response, all responses were included. Data for open-ended survey results are reported for all students and not by subcategories as research question for addressing the data did not specify these categories, "What benefits do students discover when taught vocabulary instruction using a keyword strategy?" All responses provided were coded and verified by a university student familiar with the study. A checklist was used by the university student

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to verify that all responses were included and color coded markers were used to highlight responses as they were recorded. Responses were then recoded categorically and were put into an Excel spreadsheet as categories and not by specific student responses. First, similar wording was identified such as "teacher made me laugh" or "fun instruction". As the responses were coded with different color highlighters, each response was easily transferred into a theme category. This was done after all responses were recorded. If a student left a column unanswered, it was not considered. By recording categories by responses, with no connection to a specific student, disability or grade level, there are no identifiable data to these measures. However responses are coded by condition (mnemonic vs. traditional). By evaluating the themes, responses were specific to treatment group only. Clerical reliability was checked by two separate people, a university student and a teacher, with 95% reliability.

Five open-ended questions were the same for both conditions. Table 11 shows the responses to the questions "If you liked English this year, describe here what you like about it" and "If you did not like English this year, describe here what you did not like about it" by the frequencies of the themes in each condition (mnemonic or traditional) represented as percentages. In order to be included, at least three students needed to respond in a way that fit into that thematic category. For example, "it's fun" and "funny" would fall under the same theme.

Table 11

Student Opinions of English and Learning Vocabulary

| | Condition | | | |
| | Mnemonic | | Traditional | |

If you like English this year, describe here what you like about it.

	n	*%*	*n*	*%*
Teachers and their making class fun	45	60%	47	64%
What I have learned	8	11%	3	4%
Activities (words, reading, writing, games)	5	7%	15	23%
Easy for me	4	5%	7	9%
Do not know why	13	17%	0	*0%*

If you do not like English this year, describe here what you do not like about it.

	N		*n*	
Do not know	37	62%	0	0%
Writing activities	15	25%	7	5%
Reading activities	1	2%	4	3%
The subject itself	7	12%	4	3%

n = # of responses
%= # of responses

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Traditional Condition
Question (If you like English,describe
what you like about it.)
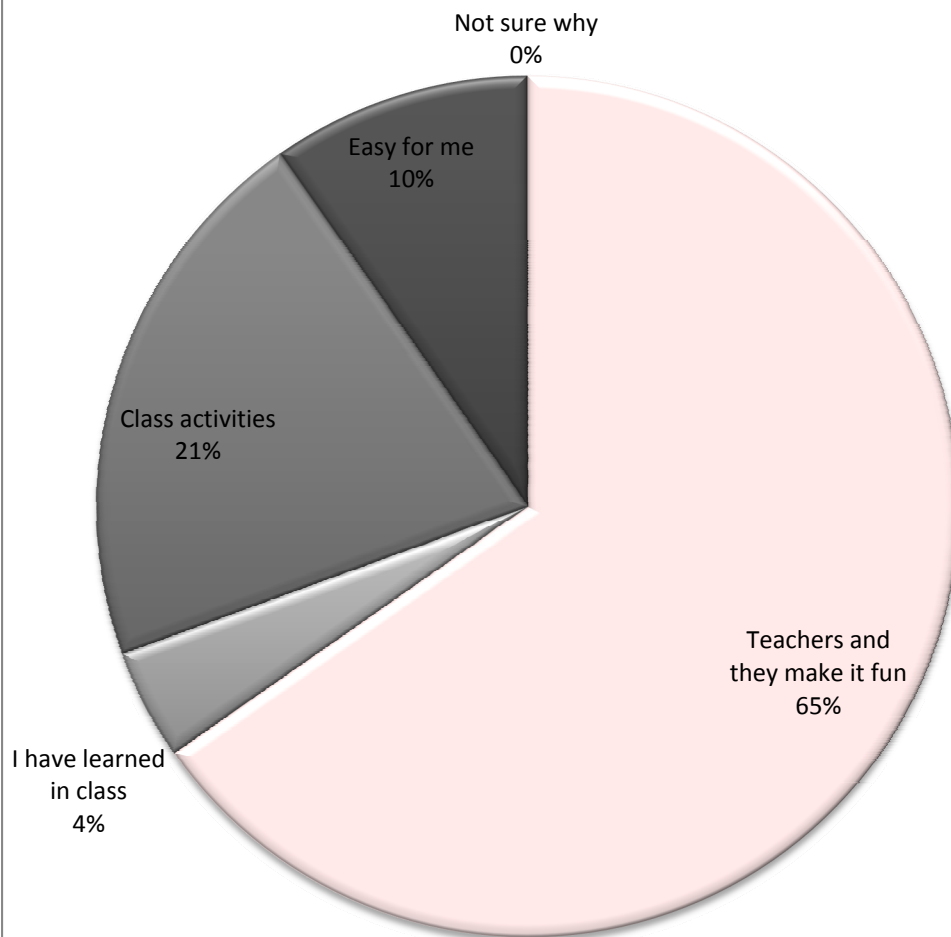
Figure 11. Responses for traditional condition: like.

Mnemonic Condition
Question (If you like English, describe what you like about it.)

Easy for me
6%

Class activities
8%

I have learned in class
13%

Teachers and they make it fun
73%
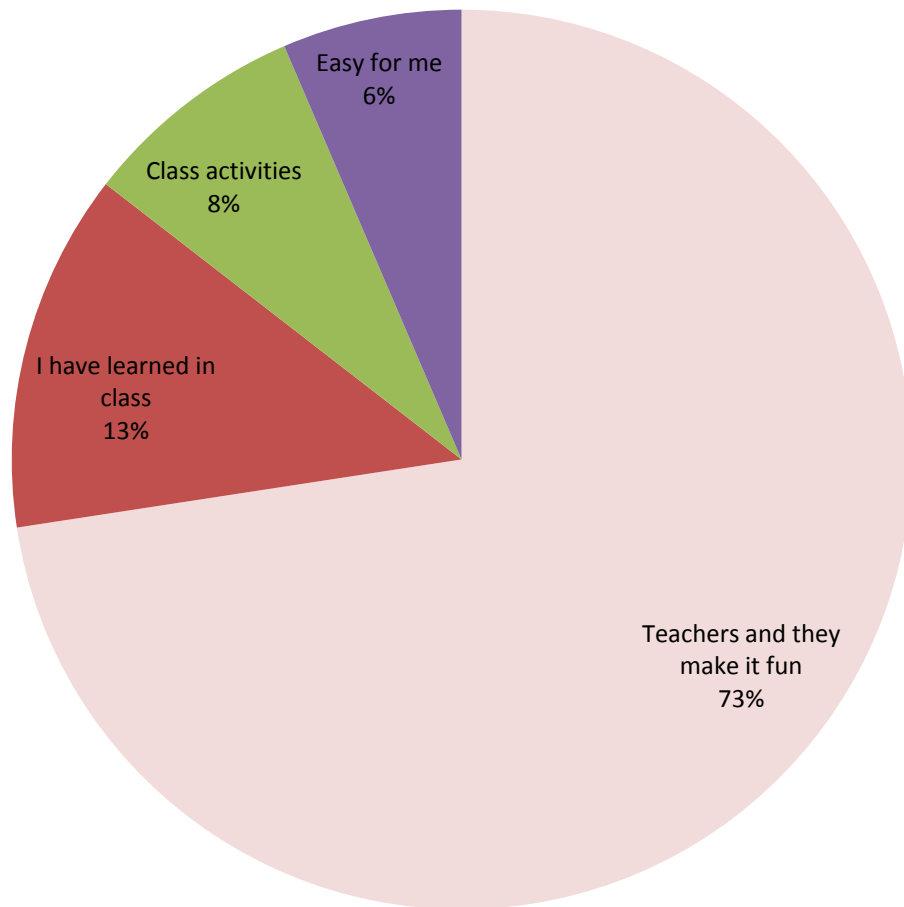
Figure 12. Responses for mnemonic condition: like.

Traditional Condition
Question - If you did not like English this year, describe here what you did not like about it.

Not sure why
0%

Just like English
27%

Writing activities
46%

Reading activities
27%
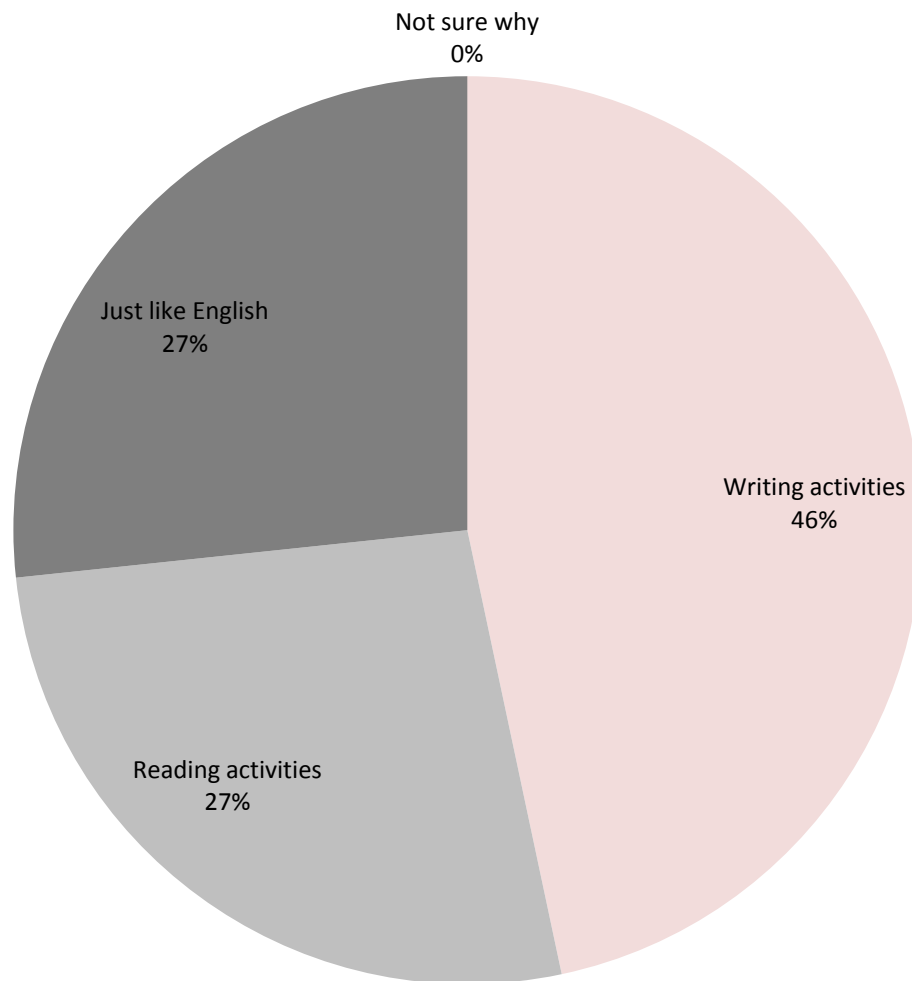
Figure 13. Responses for traditional condition: dislike.

Mnemonic Condition
Question - If you did not like English this year, describe here what you did not like about it.
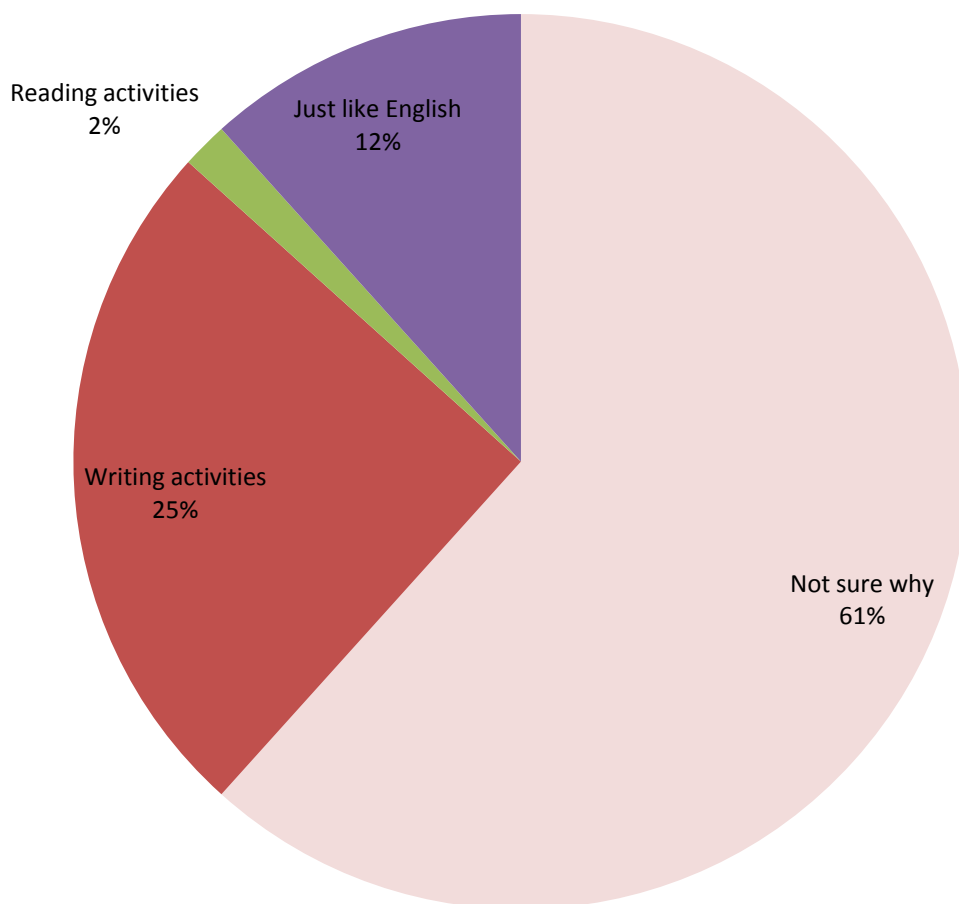
Reading activities
2%

Just like English
12%

Writing activities
25%

Not sure why
61%

Figure 14. Responses for mnemonic condition: dislike.

In the first open-ended question, responses relating to the teacher and how the teacher made the English class fun with 92 responses. Twenty of the responses stated they liked the way the teacher presented the vocabulary words and made the activities interesting. Eleven students reported that they liked what they were learning this year, not necessarily learning vocabulary – the literature, reading, etc. Twenty students reported that they liked the writing activities the teacher provided in class: essay writing, sentence writing, research, and papers in general. Another eleven students believed English was an easy subject for them and thirteen students did not know why they liked English.

In the second open-ended question, 37 students could not explain why they disliked English. More students disliked writing activities (22 responses) than reading activities (5 responses). Eleven students responded that they just did not like English, some stating for the writing and/or reading activities.

In the third open-ended question relates to student opinion, activities that helped make learning vocabulary easier for the student. There were 40 responses positively relating to the use of mnemonic pictures or the use of a linking word. Another 67 responses from students indicated that they vocabulary helped them with general study habits or reviewing to make learning vocabulary easier for themselves. Another forty-six student responses favored the use of flashcards whereas 25 student responses indicated a preference for looking at the words directly as they would read over them on a piece of paper or study guide or generally just review the vocabulary words.

In the fourth opened ended question on student opinion, the student responses relate to study habits before taking a test. One hundred five student responses indicated

that studying was involved with no specifics as to how the student studied for a test. Other student responses indicated that they used flashcards (32 student responses), just remembered the words (11 student responses), or the student would look at the pictures and/or linking words (15 student responses) when studying for the test. Five student responses said they were not sure how they studied.

The final open-ended question on student opinion asked about activities involved in memorizing new vocabulary words. The most frequent response was the use of reading activities with 46 student responses using activities such as reading over words or reading the notes that were taken in class. Hands on or creative activities generated 45 student responses while any type writing activity had 34 student responses. Examples of hands on activities students referred were self initiated games, jokes, making up their own mnemonics, and other activities they invented as they were studying. Writing activities included writing words a specific number of times, writing sentences, or writing semantic recalls. The use of flash cards had 40 student responses. Student opinion responses are shown in table 12.

Table 12

All Student Opinions by Condition

Student Activities in English and Learning Vocabulary

	Mnemonic		Traditional	
What activities help make learning vocabulary easier for you?				
	n	*%*	*n*	*%*
Reading, reviewing, looking at words	8	32%	17	17%
Pictures, cartoons, linking words	30	35%	10	10%
Flashcards	18	21%	28	29%
Study or review	29	34%	38	39%
Study with buddy	0	0%	5	5%
If you study before a test, what do you do?				
	n		*n*	
Study, review words	51	61%	54	64%
Use flash cards	13	16%	19	22%
I just remember words	6	7%	5	6%
Look at pictures, links	8	10%	7	8%
I don't know	5	6%	0	0%
What activities help you memorize new vocabulary words?				
	n		*n*	
Flashcards	17	19%	23	31%
Writing activities	20	22%	14	19%
Hands-on or creative activities	29	32%	16	21%
Reading activities	24	27%	22	29%

n= number of responses
%=percentage of responses

Students in the mnemonic condition were asked to answer the last three open-ended questions as they reflected opinions about the how to use mnemonics in other classes and what they liked best/least about mnemonics. Table 13 describes these results. In the first question, students were asked if they thought the mnemonic cards could be used in other classes, twenty-five students stated that the cards could be useful in history and government while 23 students thought they would be useful in science. Ten students thought that they would be useful in mathematics. Five students thought they would be helpful in elective classes such as physical education or band, and twenty-six students reported they did not know where they would be useful.

In the second question, students were asked what they liked best about using the mnemonic cartoons. Twenty-four students liked the visual aspect while 8 students liked them because they were easy to use. Eight students reported liking them because of the linking words and 7 liked the humor in the cartoons. Eleven students stated they did not know.

In the third question, students were asked what they liked least about using the cards. Thirty-two students stated that they disliked nothing. Twelve students thought the cartoons did not match the vocabulary word or did not make sense while eight students did not like the pictures.

Table 13

Embedded Strategy Questions in Mnemonic Condition Only

	Mnemonic	
	n	%
If you think similar mnemonic cartoons could be used in other classes, list which classes.		
History/government	25	28%
Science	23	26%
Mathematics	10	11%
Other	5	6%
Did not know	26	29%
Describe what you liked best about using the mnemonic cards		
Pictures	24	41%
Easy to understand	8	14%
Linking words	8	14%
Humor in cartoons	7	12%
Did not know	11	19%
Describe what you liked least about using the mnemonic cards.		
Cartoons did not make sense	12	23%
Pictures	8	15%
Did not know	32	62%

Teacher Satisfaction Survey Results

At the end of the study, four teachers participated in a five level Likert-type satisfaction survey for the first seven questions. Teachers circled a 1 if they strongly agreed with the statement, 2 is they agreed, 3 if they were undecided, 4 is they disagreed, and 5 if they strongly agreed. Teachers then were asked to discuss the study in an inform interview format, whereas they were given the opportunity to make statements about their experiences in this study. The intent of the questions was to determine teacher opinions about the mnemonic cartoons and whether they felt it was a worthwhile activity in their English classes. When asked if mnemonics is better for teaching vocabulary rather than traditional instruction with terms and semantic recalls, all teachers strongly agreed. When asked when compared with mnemonic instruction with terms and semantic recalls, traditional instruction is better for teaching vocabulary, all teachers strongly disagreed. When asked if students were actively engaged when using the mnemonic cartoons, two teachers answered agreed and two strongly agreed. When asked if traditional instruction with terms and semantic recalls helped improve vocabulary instruction one teacher was undecided and three disagreed. All teachers strongly disagreed that they would rather use traditional instruction in the future for vocabulary instruction.

Open Ended Questions

The first open-ended question asked teachers which type of instruction they preferred for teaching vocabulary. All four teachers reported liking the mnemonics. One teacher reported liking the mnemonics because she felt they were helpful for students that need a visual aspect and interaction. She felt the class was more involved in the

instruction with the mnemonics. The other three teachers liked the cards because they felt that students were actively connecting with the vocabulary. All the teachers agreed that using mnemonics was beneficial in their classroom.

When asked in the second question, which type of instruction seemed easier for the delivery of new vocabulary, one teacher reported that the mnemonic cartoons allowed for a "fun" aspect of class and there was less complaining about learning new words. Another teacher preferred the cards because it required no additional writing for students except what was related to the cartoon and students were entertained and laughed at some of the cartoons. While all four teachers provided positive responses to the question, one teacher was concerned with the amount of time it took to complete the mnemonic reviews and drawings that the students did in class. She felt she would have to adjust her time limits if she were to continue with the project in the future. She did say however that the student were definitely more engaged in instruction, with their peers, and easier to get along with while performing these tasks.

In response to the tenth question about what the teachers enjoyed best about mnemonic instruction, three of the teachers said it engaged the students more and there was a greater level of participation. One teacher indicated it was an easy format to follow and required little preparation since the materials were ready made. In response to questions about what teachers liked least about teaching with mnemonics, two teachers focused on the students' interaction with the materials, their level of engagement with the materials, and student enjoyment. Another teacher said the amount of review was tedious and the other said some of the cartoons were hard to understand. For example, when a

cartoon showed a picture of something that was archaic to the students, there was more time spent on explaining the concept than the word. This allowed some students to get off task for a few minutes.

The next open-ended question asked what did students think about the mnemonic cartoons. All four teachers stated the students liked them and would laugh at the pictures – whether or not they knew the vocabulary word. One teacher stated a student would even try to act out the word if the cartoon was hard to understand. He said this shows how students can better engage with the material.

In response to the last question, did your students appear to recall more words with mnemonics, all four teachers agreed the visual aspect assisted in student learning of new vocabulary words. Other comments from the teachers indicated the students benefited from the mnemonics by how they acted in class and general class discussion.

What Teachers Liked Most About Mnemonics

Teachers commented on how students were more interactive with the lesson when vocabulary was presented in the mnemonic strategy. One teacher stated, "they participated more and laughed." Teachers were in agreement that students made progress in their own learning when using mnemonic strategies and although some students did not necessarily score higher on the quizzes, the process was more productive and enjoyable. One teacher stated, "I would continue to use this strategy with my classes next semester."

What Teachers Liked Least About Mnemonics

While the majority of the feedback was positive, one teacher was concerned with the time commitment of teaching the mnemonic strategy. He felt that the allotment of 15 minutes was not sufficient. While he believed the mnemonic strategy to be beneficial for all of this students, he stated, "in the beginning of the week it was time consuming and I felt it just took too long." Another teacher was a special education teacher and she believed all her students benefited, were more actively engaged in instruction, and were better able to discuss the new vocabulary words weeks later. All the teachers generally agreed that the mnemonic strategy was more interactive for the students and with few problems (archaic cartoons or unusual pictorial references), instruction was more engaging.

CHAPTER 5 **Discussion**

This study was intended to examine the use of mnemonic strategies in the high school English inclusive classroom. The purpose of this chapter is to discuss the findings of the study stemmed from the five research questions.

Analysis of the data resulted in a series of findings. Overall findings revealed, (a) there was an increase in student performance on cumulative posttest for students with disabilities; (b) tenth grade students in the mnemonic condition performed descriptively higher on cumulative posttest than eleventh and twelfth graders ; and (c) the majority of students responded that, compared to traditional instruction, they preferred and enjoyed the use of the mnemonic strategy as well as how to generalize to their own learning preferences. Teachers indicated a strong desire to incorporate mnemonic instruction into their future lessons. Results of this study are discussed in reference to previous mnemonic strategy research. Finally, differences from previous research, limitations of this study, educational implications and recommendations for future research conclude the chapter.

Finding 1

Two questions in this investigation meant to address student performance. The first question sought to determine the impact of student learning using the mnemonic strategy compared to traditional instruction by student category and grade level in the

inclusive classroom. The second question sought to determine student achievement by student category and grade level, if so to what degree.

To address the effectiveness of the mnemonic strategy in the inclusive classroom compared to traditional vocabulary instruction in high school English, student performance was measured on a cumulative posttest and two unit tests. Results were mixed on these two questions and are reported here concluding with comparison to previous mnemonic strategy research.

Cumulative Posttest

Cumulative posttests have been used in many studies that compare student performance against controls including mnemonic strategy instruction. In most cases, all have consistently documented some level of significant positive effect for the mnemonic strategy. In the current study, student performance on cumulative posttest scores in the mnemonic condition outperformed that in the traditional condition for students with disabilities. This means students with disabilities scored higher with mnemonic instruction. Furthermore, students in grade ten (the younger students) scored higher on delayed posttests when receiving mnemonic instruction.

Delayed posttests have been used in number of mnemonic studies to measure and compare student performance against different controls. In these studies, sample populations have included mixed groups of students with disabilities, general education groups, and homogeneous groups. Results in this study reiterate findings from previous mnemonic strategy research in student performance with posttests. However, results in

this study contradict previous research i.e. students without disabilities did not show a significant increase in student performance on posttest.

Several studies are mentioned that show similar results in identifying the findings on posttests of the current study. One study that used mnemonic instruction in an inclusive classroom was the Uberti, Scruggs, and Mastropieri (2003) study. The researchers taught 74 students in third grade with and without disabilities vocabulary associated with the book *June 29, 1999*. Students in the keyword condition scored the highest recall on the posttest followed by the definition condition and the picture condition respectively. While the current study used two treatment conditions, the students with disabilities outperformed when receiving the mnemonic strategy but not their non-disabled peers. Specific grade levels were not categorized in the Uberti, Scruggs, and Mastropieri (2003) study.

In another study by Mastropieri, Scruggs, and Whedon (1997), 19 students with disabilities were taught the order of the first 32 U.S. presidents during a six week period. Students participated in both conditions, the same for this study. The first 16 presidents were taught using mnemonics followed by review. The second 16 presidents were taught using traditional instruction. Two weeks after instruction ended, students were administered a posttest. Results indicated that students could recall a president's name and number placement more easily than a president taught using traditional instruction. Students in the current study were taught information both mnemonically and traditionally and received a cumulative posttest. Students with disabilities in the mnemonic condition recalled the vocabulary words more easily on the posttest than that

was taught using traditional strategies. The performance of special education students in vocabulary as well as other content areas on immediate posttest has resulted in significant differences demonstrating that the mnemonic strategy was more effective than a variety of other approaches (e.g. Mastropieri et al., 1992; Scruggs, et. al., 1985). However, the results of the current study support these findings for students with disabilities and only on the delayed cumulative test.

Finally in the Marshak (2008) dissertation, seventh grade students in inclusive classes in the mnemonic condition statistically outperformed students in the comparison condition on gain scores on the overall delayed recall measure. In this study, Marshak (2008) explains in her comments that the students used embedded strategies four times in each unit for 2.5 months of instruction. Students statistically outperformed the comparison students who learned the same content through traditional instruction. This study also investigated the effects of classwide peer tutoring which was not addressed in the current study. Another difference in the current study is that students were introduced to different vocabulary words each week with no review of these words before the delayed cumulative posttest. Students learned new vocabulary over a four week period. Again, the current study contradicts some of these results in that all students in the current study did not increase performance in the delayed cumulative posttest.

This is an important note as students in high school are required to take end of course, high stakes tests in numerous content areas. Students must memorize large amounts of content including extensive concepts and vocabulary associated with the content. Typically information is learned over a 10 month period. Since students with

disabilities in this study were able to recall information over an extended period with no review, the mnemonic strategies may be beneficial when preparing these students for these high stake tests, where repetition is more frequent.

Unit Tests

Analysis of unit test scores however revealed no significant differences by student factor (for students with and without disabilities). This means that the scores of students in both student categories indicate that students had better recall and application in units presented in traditional instruction. Unit test results in this study contradict findings from previous mnemonic strategy research in student performance with unit testing.

Several previous dissertations also contradicted these findings. Lang (2001), investigated the effects of self-instruction strategies to teach algebraic problem solving to students with diabilities. The study reported that student performance in both conditions increased from pretest to posttest, however there were no significant differences between treatment conditions, similar to the current study. Also, traditional instruction condition was based on a model of effective instruction adding strength to the control treatment condition, as in this study.

In another study, Fontana (2007) showed results on student performance that also did not indicate a signficant difference by treatment groups on unit tests and showed mixed results on cummulative posttests, where two categories of students showed improvements – general education and ESL but not students with disabilities. According to Mertens (1998), this suggests that the effects of mnemonic strategies with this sample were not evident in a short term study but may be related to student performance on

delayed posttests with positive effects for mnemonic instruction. The effects of mnemonic strategies were not evident in the short term but maybe related a time lapse. Considerations tend to lead to this finding for the current study on unit tests.

Finding 2

Another finding from this study was younger students in the mnemonic condition performed descriptively higher on cumulative posttest than that of their older peers. This finding continues to address the first two research questions to determine the impact of student learning using the mnemonic strategy compared to traditional instruction by student category and grade level in the inclusive classroom. Students in the lower grade level consistently scored higher on unit test recall and application factors in the mnemonic instructional condition. The results of the current study also extends results from many studies using mnemonic materials with younger students.

For example, Scruggs, Mastropieri, Brigham, and Sullivan (1992) taught 39 seventh and eighth graders with learning disabilities social studies through significant war battles using a keyword and corresponding picture for each battle. Students were instructed and assessed individually by the researcher in a one on-one setting. Results indicated that students in the treatment condition significantly outperformed students in the control condition for this younger age group. The results of the current study extend these findings. Tenth grade students in the current study were asked to recall information on a delayed post test. The current study differs in the way instruction was delivered to the students.

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Mastropieri and Scruggs (1989) taught 17 elementary students with disabilities Indiana using mnemonic with reconstructive elaborations in five sessions. Classrooms were assigned to treatments (mnemonics vs. traditional) and had the teachers deliver the mnemonic information on the overhead machine. Students were then administered an immediate recall test and a delayed recall test. Results indicated that students recalled more information under the mnemonic condition than the traditional condition. The current study replicated the Mastropieri and Scruggs (1989) study by using two treatments and using mnemonic strategies with younger students however the age difference is noted. It also extends that the teacher delivered the mnemonic information, the same for the current study.

Finally in another study, Brigham, Scruggs, and Mastropieri (1995) also used mnemonics to teach the social studies with 72 middle school students with disabilities. Results indicated that students who viewed maps with keyword mnemonic representations and the elaborative maps recalled significantly more locations than students did in the control conditions. As in the Brigham, Scruggs, and Mastropieri (1995) study, younger students in the current study increased their recall. The current study extends this study by taking place in an inclusive setting with students with and without disabilities. It is different in the delivery of instruction as the current study teachers presented instruction.

A further explanation for the lack of performance of the eleventh and twelfth grader older students might be previous experience with embedded strategy use. By the upper grades in high school, it is possible that students already have skills in strategy use

and referred to these skills as opposed to the ones taught in the current study. Students at these grade levels, close to the end of high school, may be more strategic independent learners. Another possible explanation could be how older students responded to direct teaching of difficult vocabulary that may not be part of other activities in their current English class. No specific studies were found to support this possibility.

Finding 3

The final research questions address student and teacher perceptions of strategy use with mnemonics. In this finding students were asked about whether they liked English last year, the many of students said that they liked English but more were undecided. Then again when asked about English this year, the majority of students liked English, far more than were undecided, because they stated they liked their teachers. They also reported that the teacher made the class fun even when the students were unsure of what certain vocabulary words meant. The student/teacher relationship was positive in this respect, which helped students to want to learn. This may explain the discrepancy between last year and this year. If students like their teacher and consider activities fun and interesting, the class is more enjoyable for them.

An important finding from the student surveys is that students reported that they did study for tests and relied heavily on reviewing the vocabulary words. In studying for tests, most students reported reviewing the words and pictures by looking at them or "just studying" them as they put it. Very few students were able to report a specific strategy or technique they used to study. No research could be located that supports or refutes these findings.

From the tutoring condition student surveys another important finding indicated that the majority of students relied on flashcards. While in the mnemonic condition students used the materials given in class – keywords and links to vocabulary words as well as the hands-on activities used in class. A vast majority of the students reported that they would like to use mnemonics in other subjects, especially core content classes: social studies, science and math. The current study replicates results from the Mastropieri and Scruggs (1989) study described above in the survey results. Students reported in the Mastropieri and Scruggs study that they enjoyed using the mnemonic materials especially the illustrations which helped them learn more information. In addition, when asked if they would like to use the mnemonics in other subjects, students again responded positively and included core subjects as possibilities for using them.

Survey results from the current study also replicate results from the Fontana, Scruggs, and Mastropieri (2007) study, another study investigating mnemonic strategy use. In the Fontana, Scruggs, and Mastropieri study, the researchers taught 50 students in inclusive high school classrooms, world history using mnemonics. Teachers taught students with the same two methods, mnemonics and traditional instruction. While in this study there was no statistically significant difference on the recall measure, the current study replicates the student survey results. Students did report liking the use of mnemonics and the activities related to them. The students believed they learned more using the mnemonics than with the traditional instruction. They also would like to use the mnemonics in other high school classes such as English, science, and math. The current study extended this research by investigating strategy use in different content area –

English, with a similar age group – high school students. It differed in that the current study included the oldest age groups in high school, 11th and 12th grade. It also extends the delivery of the mnemonic materials. In the Fontana, Scruggs, and Mastropieri (2007) the teacher delivered the mnemonic instruction, the same for the current study.

An important finding from the teacher surveys was that all the teachers reported that the mnemonic strategy improved instruction and students interactions during instruction. They reported favoring the use of mnemonic strategy materials for teaching targeted information because it provided a strategy for students to learn more difficult and unfamiliar vocabulary words. In addition, teachers reported that students learned the vocabulary easier than their students did in the traditional condition. Mnemonics being a visual strategy helped the students relate and be engaged in class. Teachers also reported liking the mnemonics for students with disabilities because it helped them learn the vocabulary without focusing on the difficulty of the material. They had fun, tried hard, and prepared for quizzes. It also kept these students actively engaged and on-task during the presentation of the words and some students even began to create their own mnemonics for words. Even when words were unfamiliar, students were able to connect keywords and illustrations. Student interaction in the classroom is greatly enhanced with engaging activities according to the teachers surveyed in this study.

Teacher survey results replicate the Mastropieri and Scruggs (1989) study described above, teachers reported that they had enjoyed using the materials. They also stated that the materials were easy to use, that they motivated their students and that they helped students learn more content material than when using traditional instruction.

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Several teachers expressed some concern however, with the amount of time spent presenting new vocabulary and reviewing words, but this may be explained by the small amount of time the teachers normally spend on direct vocabulary instruction in a typical day. Students consistently expressed positive interactions with the strategy which is supported by the survey results of the teachers.

Differences and Previous and Present Research

An investigation with results that contradict such a large body of research requires that we look at possible explanations for the differences. Examination of specific factors of uniqueness of the current study, such as student population, subject matter, nature of control condition and delivery of service are discussed as contributing to the student performance results obtained in the current study.

The most significant departure of the current study from previous research in the area of mnemonic strategy instruction, and what might as well be a cause of the ambiguous outcome, lies in the student population. Students in the upper grades of high school are older than other participants in previous studies. Of the students reviewed, students from grades eleven and twelve were nonexistent. Most students in previous studies were from middle school grades and/or ninth grade for example the Mastropieri, Scruggs, and Graetz (2005) chemistry study.

A further departure from previous research is in the subject matter. Mnemonic strategy instruction was not compared to what typically occurred in direct instruction. According to teachers, explicit vocabulary instruction of difficult, more archaic words had not been part of the instructional routine prior to this investigation. Students in these

inclusion classes were accustomed to receiving words specific to literature and reading with directions or workbook practice on how to write the definitions. Some grading of these assignments took place, but was not specifically addressed as determining semantic recall or understanding of new words. The typical format for testing was matching the word to a column of definitions.

Students received systematic instruction in both conditions and demonstrated performance in both treatment conditions. According to Cawley (2002), there is a tendency for both experimental and control groups to increase performance during an intervention. This was seen in two previous dissertations. In the Lang dissertation (2001), investigating the effects of self-instruction strategies to teach algebraic problem solving to students with disabilities, the study reported increase student performance in both conditions from pretest to posttest. However, no statistical gain was specific for the treatment condition. Again, as seen in the Fontana dissertation (2001), students in both conditions on the terms and concepts in social studies investigation of mnemonic strategy instruction resulted in similar findings. No statistical differences were seen.

Differences in the type of instructional groups are yet another departure from past studies. In the majority of previous research instruction occurred in one on one or small group with a researcher or special educator (Brigham, 1995; Mastropieri et al., 1990). The natural setting of inclusion classes prevented small group instruction. In the current study instruction was delivered by and observed by the current classroom teachers not the researcher in a whole class presentation under normal conditions.

Another finding from the current study was no statistical differences were found by treatment condition, mnemonic or traditional. This means that students regardless of ability did not perform differently in the mnemonic condition. The differences therefore in performance were not due to condition. Additionally, students without disabilities in the both conditions consistently outperformed the students with disabilities on both item types – semantic recall and application of words.

Students without disabilities typically outperform students with disabilities in academic classes. Inclusive classes, as used in the current study, typically include more students with disabilities who typically perform lower than that of their non-disabled peers. This may be an attribute of the difficulties encountered by students with disabilities learning and recalling content area information and material at a rapid pace. Interestingly enough in the current study, the mean performances of the students without disabilities were higher on traditional instruction in most cases. This contradicts previous research that has seen positive benefits for the use of mnemonic strategies with typically achieving students (e.g. Mastropieri & Scruggs, 1989; Mastropieri et al., 1992).

Finally, there is evidence of the use of mnemonic strategies as an additional strategy for older students to learn and effectively use. There is evidence of lower level strategies, variations of other strategy use, such as the high number of responses indicating "use of flashcards." Several older students indicated that learning a new strategy this close to graduating from high school was "childish" and "useless" as I already know how to study and learn new words. Mertens (1998) described novelty and disruptive effects in a new treatment may be a cause in disruption of a normal activity.

When a student already uses a system of study that has served them well and successfully in the past, they may be reluctant to change. Perhaps the mnemonic strategy instruction did not fill an existing void for these students, but was an imposition to a preset skill of study strategies.

Several additional factors may contribute to the lack of findings in the current study. First, teacher implementation may have not have adhered to the training procedures. Second, students may learn less when taught in whole group instruction compared to a one on one instructional situation. Third, more intensive instruction such as one on one instruction, may yield increased student performance. Finally, co-teaching in the present study consisted of the general educator teacher and the special educator assisting students on an as needed basis. Perhaps a different model of co-teaching in which both teachers were more active participants during instruction may have yielded different findings as well.

Limitations

There are several factors which limit the findings of this study. First students were already assigned to a class prior to the study as this was a semester long course. Then, teachers were recruited on a volunteer basis. However, the classrooms were assigned to each condition randomly. This could have affected the study's outcomes.

Secondly, due to a limited amount of time, students may not have shown their full potential to increase performance and attitudinal change. Additionally, SAT vocabulary had not been part of regular classroom instruction. Time limitations may have hindered students' potential in this study.

Thirdly, no direct observation was conducted of teachers in either condition in the study. Teachers only documented instructional time and progress on a self evaluative form. The researcher did not observe instruction in the classroom. Therefore, it is possible that implementation of the strategy may have differed from what occurred in teacher training, or the amount of instructional time recorded was inaccurate. This limits fidelity of treatment implementation because it is unknown exactly what happened during the intervention. The teachers did report in survey data that the strategy was beneficial and they would use in the future, but also stated that it was time intensive and was not consistent with how students normally learned new vocabulary. All of these procedures in implementation need to be considered as possibilities in differences from previous research in this area. Future research should document carefully with direct observations how high school teachers are using these materials.

Further research with longer more intensive intervention time, reduced difficulty in word selection and monitored observation, and specific observation times by the researcher may provide further evident of these students' ability to learn new vocabulary words.

Educational Implications

Students are required to pass standardized end of course tests in English. These tests tend to be based on reading comprehension and vocabulary and rely on students to process large amounts of reading in a short period of time. If students report as in this study that they just merely just look over material as a study tool or just memorize a new word for an immediate test, teachers need strategies they can use in class to help students

remember a vast number of vocabulary words that are not just content specific. The embedded strategies used in this study helped these students learn new more difficult vocabulary at a fast pace.

Many students are receiving their education in inclusive setting with students varying in degree of disability type. Usually, a general education teacher is responsible for the delivery of instruction and must design lessons to meet the needs of students that learn the curriculum at varied paces. While the inclusion model typically includes a special education teacher, many general education teachers may have little to no training in strategies to help students with disabilities. The materials used in this study helped some students regardless of whether they had a disability. Therefore, these activities can be considered for use with all students in inclusive settings, specifically students early on in high school allowing sufficient time to implement strategy use.

Implications for Practice and Future Research

This research has replicated teaching mnemonic strategies to students in high school inclusive classrooms and has extended this strategy for students with disabilities and at-risk in an authentic classroom teaching situation. If teachers and schools consider using this strategy in their English classes in the future, training should be given to teachers for proper implementation. Additionally, longer intervention times must be implemented. This study showed that for some students' limited time yields limited results. Future research with this inclusive population should monitor the academic performance of all students and should include information on the level of support necessary for students with disabilities and a variety of methods, resources, and

assessments used in an inclusive classroom. Fidelity of implementation should be closely monitored. Data could be used to guide instruction in any inclusive setting with supports from parents, teachers, and administrators as they make placement decisions for students with disabilities.

Summary

This study sought to replicate and expand upon previous research in the effects of mnemonic strategy use for students who struggle in school including students with disabilities. To do this, the current study took place in inclusive high school classrooms and instruction was delivered by classroom teachers with anticipation of measuring student performance and perceptions of all students in the classes. The discovery and implemenation of when the treatment was given provided for an additional opportunity for expansion. Results for the most part contradicted previous research on student performance in unit tests and posttests for student categories but supported research for strategy use with younger students and on delayed cummulative posttests for students with disabilities. It has been demonstrated that the results in this study for mnemonic strategy use, student and teacher attitudes and perceptions concur with the previous findings in mnemonic studies.

With the additional pressure associated with high stakes testing and No Child Left Behind, instructional strategies that enhance long-term memory should interest educators in general and specifically those that work with struggling learners. This population continues to grow and be tracked in the current state of educational affairs.

Appendices

Appendix A: Teacher Manual

1. What is the purpose of the study?
>   The purpose for this research study is to develop, and obtain evidence of potential efficacy of, supplementary English/literature material providing memory-enhancing strategies, for students with and without disabilities, in a collaborative setting, in 10-12 grade English classrooms. Memory-enhancing strategies are mnemonic devices that target specific vocabulary and provide additional practice using a visual representation to increase comprehension. In this study it will be used with the teacher selected SAT vocabulary words. The students will also be surveyed using an informal non-electronic survey. The students will receive the memory-enhancing condition and participate in the activities related to the visual materials used. The aim of the research study is to teach mnemonic strategies and evaluate whether further research is appropriate. Students in the class who are not part of the study, who do not receive parental consent and student assent will participate in the activities since they are school approved activities; however, their associated performance and achievement data will be unavailable to the researchers.

2. How will this benefit my students?
>   Students with learning disabilities have difficulty with long-term memory, short-term
>   memory and semantic memory. Students have difficulty recalling information that they just read or heard as well as remembering information when performing other cognitive tasks. One strategy that has been used to help memorize content information is mnemonics. Mnemonic strategies are systematic procedures for enhancing memory. They assist students with encoding the new content information in order to make retrieval easier. Numerous research studies have demonstrated the effectiveness of mnemonics in improving the content knowledge of students. This study will focus on (a) recognize and apply specialized vocabulary, and (b) use specific revision strategies and adapt content, vocabulary, voice, and tone to audience, purpose, and situation (adopted SOL standards grade 10, 11, and 12).

3. What are the materials?
>   These materials were designed to and supplement instruction in vocabulary learning in the English classroom. These curriculum enhancements contain 1)a picture on the front and a mnemonic strategy on the back. Instructional materials

common to both conditions include vocabulary words from a commercial program entitled *Vocabulary Cartoons II Sat Word Power.* Each week ten new words will be introduced. The ten words will be on overhead transparencies including the definition, part of speech, auditory (rhyming) word association, a visual association in the form of a humorous cartoon, and contextual sentences.

4. What are my responsibilities?

1. a. Collect parent permissions
2. Collect student permissions
3. Administer the knowledge pre test and give to Kristina
4. Teach your class as usual
5. Provide 10-15 minutes per day of instructional time for students to use the materials
6. Introduce the materials to the students
7. Supervise students using the materials
8. Keep track of the time students spend using the materials and record on teacher observation sheet
9. Administer 4 weekly vocabulary quizzes
10. Administer the post test and give to Kristina

5. How many times will I use the materials?

The materials should be used a total of four times in each unit.

6. Where should I keep the materials?

You will be provided with 2 large bins. One bin will be used to store the students' individual folders. The other bin will be used to store the materials and permission forms.

7. When do I give the knowledge pretest and what do I do with the tests?

Please administer the pretest as soon as possible. You may give the pretest to students
even if they have not returned their forms. You can administer but I cannot use their
scores in the final report unless they return both forms.

8. What do I do the first day I use the materials for mnemonic condition?

See the script on the following pages. Remember there are two weeks. Each week if set up with five daily lessons.

9. What do I do on the first day I use the traditional condition?

See the script on the following pages. Same as #8. There is no specific script but all materials are provided.

10. What do I do with the weekly vocabulary quizzes?

Please give the scantrons to Kristina. If you would like to pass them back to students, I can copy them and give the scantrons back to you.

12. When do I give the post test and what do I do with the tests?

You may administer the post test within one week after you administer the final (week 4) weekly vocabulary quiz. Then, give the scantrons to Kristina.

13. What do I do when the students are using the materials and I am presently the new words?

The students will be using the materials at their seats. Your job is to circulate around the
room to make sure they use are following along and copy down all the words.
There are two sets of the vocabulary words on index cards for extra practice, absences, or other.
Record on your log sheet how long they spent using the materials.

14. What do I do with the classes that do not use the materials?
The control classes or the traditional classes will remain "business as
usual." Do the exact same activities as you normally would do. Do not give them the
mnemonic materials or refer to any of mnemonic strategies in this class. In order to see if
they work, we need to compare the class receiving the strategies with one that does not
receive any of the strategies.

16. What records should I maintain?
On the following page is a teacher record sheet. Each day the students use the materials,
record the date and length of time of use next to the week number. Also, I have
provided a comments page. Write the date and then any comments you have of that day's
implementation. What worked? What was a problem? What would you like to see
changed? What would you like to see kept in the program? And any other comments you
may have. It is important to remember to write the date next to each comment.

17. Why did I choose your classroom?
I chose your classroom because your principal recommended you as an exemplary
teacher. I wanted to make sure that both classes would receive excellent
instruction to test the impact of the mnemonics strategy.

18. What happens if I get a new student?
a. *If the student comes in before the first day* you give the permission forms,
administer the pretest, have the students use the cards and continue as usual.
b. *If the student comes in after the first day* you have the students use the cards,
have the student participate with everything. Don't worry about the permissions.
A student needs to take the pretest before the first day of using the cards in order
to be counted.

20. What happens if a student leaves my school?
a. Don't worry about it; just tell me who it is.

21. What happens if a student moves sections in my classes?
a. Try to have students move from experimental to experimental sections. Try to
avoid having students move between conditions.
b. Just tell me who it is.

22. Why am I being observed?
a. We need to make sure the students follow the directions and each teacher

teaches the cards the same way.

b. The checklist the observers will use is included in this manual.

23. Teacher Materials
   a. Student permission form
   b. Parent permission form
   c. Student Record Sheet (there should be enough composition journals in your bin)
   d. Teacher Record Sheet
   e. Script for Day 1: mnemonic
   f. Transparencies for Day 1
   g. Script for Days 2-5: mnemonic
   h. Script for Day 1: traditional
   i. Transparencies for Day 1: traditional
   j. Script for Days 2-5: traditional
   k. Teacher Observation Checklist
   l. Knowledge Pretest
   m. Post Test

George Mason University
Margo Mastropieri and Kristina DeWitt
(703) 993-4136; (540) 846-1692; Fax (703) 993-2063
Email: mmastrop@gmu.edu kdewitt@gmu.edu

Parent Permission for Participation in Research: Informed Consent
Project Title: Keyword Mnemonic Strategy: A Study of SAT Vocabulary in High School
English

RESEARCH PROCEDURES: Your child is participating in a study to test whether or not a
supplementary method of teaching new vocabulary words is effective or not. Your child will use
this new technique in the English classroom as it will be integrated into the weekly lesson plans
of the English teacher. We will be evaluating how the student responds to using visuals with the
vocabulary lessons.

We would also like to ask your child some questions about the new technique. These questions
should only take 15 -20 minutes and will not interrupt your child's regular instructional time. All
the study's materials will be in locked files and accessible only to project staff, and viewed only
by project staff. We would also like to access existing test scores and grades from your child's
school records. Once the information is collected, a student pseudonym will be assigned, and
identifying information will be discarded.

This consent form and a student assent form will be given to you at our meeting. The information
will be described and we will answer your questions. We will collect it and give you and your
child a copy when we meet.

RISKS: There are no foreseeable risks for participating in this research.

BENEFITS: There are no benefits to you, but your child may benefit increase their knowledge of
learning new vocabulary. In addition, there may be benefits to motivating your child to
independently use this technique in other classes.

CONFIDENTIALITY: The data in this study will be confidential. All information collected will
be identified only in terms of a coded identification name and all information reported will be
combined data and therefore not identifiable to any individual. A code will be placed on the
survey and through the use of an identification key, the researcher will be able to link your survey
to your identity. Only the researcher will have access to the identification key.)

PARTICIPATION: Your child's participation is voluntary, and your child may withdraw from
the study at any time and for any reason. If your child decides not to participate or if your child
withdraws from the study, there is no penalty or loss of benefits to which you are otherwise
entitled. There are not costs to you or your child.

CONTACT: This research is being conducted by Margo Mastropieri from the College of Education and Human Development at George Mason University and Kristina DeWitt, a teacher at Brooke Point High School. You can contact us at this number (703) 993-4136 (Margo) or (540) 846-1692 (Kristina) with questions or a research-related problem. You may contact the George Mason University Office of Research Subject Protections at 703-993-4121 if you have questions or comments regarding your rights as a participant in the research. This research has been reviewed according to George Mason University procedures governing your participation in this research.

CONSENT
I have read this form and agree to participate in this study.

_____
Name

_____
Date of Signature

Version date: 12/23/08

Appendix C: Teacher Consent Form

George Mason University
Margo Mastropieri and Kristina DeWitt
(703) 993-4136; (540) 846-1692; Fax (703) 993-2063
Email: mmastrop@gmu.edu   kdewitt@gmu.edu

Teacher Permission for Participation in Research: Informed Consent
Project Title: Keyword Mnemonic Strategy: A Study of SAT Vocabulary in High School English

RESEARCH PROCEDURES: This research is being conducted to develop, and obtain evidence of potential efficacy of, supplementary vocabulary instructional for students with and without disabilities in high school English classroom. The materials will be developed to provide supplemental activities for the content covered in high school English classes and Standards of Learning Assessment to test whether or not it has an impact on student learning. If you agree to participate, you will be asked to you will be asked to work with the project staff and use both newly developed vocabulary materials and use teaching materials from the curriculum as usual. Teachers in the study will meet for 30 minutes to review the instructional materials, be asked to use the materials two times during a four week period, and also asked to complete one survey that will take about 20 minutes. Following the survey you will be asked to participate in a brief 10-15 minute follow-up interview.

RISKS: There are no foreseeable risks for participating in this research.

BENEFITS: There are no benefits to you, but your students may benefit from increased knowledge of learning new vocabulary. In addition, there may be benefits to motivating your students to independently use this technique in other classes.

CONFIDENTIALITY: The data in this study will be confidential. All information collected will be identified only in terms of a coded identification name and all information reported will be combined data and therefore not identifiable to any individual.

PARTICIPATION: Your participation is voluntary, and you may withdraw from the study at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party.

CONTACT: This research is being conducted by Margo Mastropieri from the College of Education and Human Development at George Mason University and Kristina DeWitt, a teacher at Brooke Point High School. You can contact us at this number (703) 993-4136 (Margo) or (540) 846-1692 (Kristina) with questions or a research-related problem. You may contact the George Mason University Office of Research Subject Protections at 703-993-4121 if you have questions or comments regarding your rights as a participant in the research.

CONSENT: I have read this form and agree to participate in this study.

_____   _____
Teacher Name   Date of Signature

I agree____ or disagree_____ to audio taping during interview.

Version date: 12/23/08

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George Mason University

Margo Mastropieri and Kristina DeWitt

(703) 993-4136; (540) 846-1692; Fax (703) 993-2063
Email: mmastrop@gmu.edu   kdewitt@gmu.edu

Student Permission for Participation in Research: Informed Assent

Project Title: Building Vocabulary with Pictures

RESEARCH PROCEDURES: This research is to find out whether or not certain teaching methods help students learn more in school. Your teacher is going to use a new method of teaching vocabulary words. We would like to look at some of your vocabulary quizzes, ask you a few questions about the new way of learning vocabulary, and look at your grades and test scores.

RISKS AND BENEFITS: Nothing bad will happen to you if you take part in this study. There are no rewards or money paid for being in this study. You may find out that this method of vocabulary will help you in school.

CONFIDENTIALITY: Your name will be kept private. Your own scores will not be used when we write our reports and no one will tell anyone who you are. We may decide to use some of your words when we write our report, but we will never tell anyone your name.

PARTICIPATION: Your participation is voluntary, and you may withdraw from the study at anytime. We may use some of your words when we write our report, but we will never tell anyone your name. If you decide not to participate, we will not get mad at you. There are no costs to you or your parents.

CONTACT: The George Mason University of Sponsored Programs knows all about my research. They have said it is okay for me to do it. You may contact them at 703-993-4121 if you have any questions about being a part of this research.
I have read this form and agree to participate in this study.

_____   _____
Student Name   Date of Signature
Version date: 12/23/08

Mnemonic Condition

Time/date/recorder:

_____/_____/_____

_____ Materials distributed

Teacher gives daily instructions

_____ Review of previous days mnemonics or presents words
Time: _____

_____ Introduction of each of (#) _____ new mnemonics
Time: _____

_____ Student guided practice with each mnemonic
Time: _____

_____ Student independent practice with each mnemonic
Time: _____

_____ Teacher monitors students and answers questions

_____ Collect materials

_____ Dismisses, or continues with other class assignments

Additional Notes:

_____
_____
_____
_____
_____
_____
_____

Traditional Condition

Time/date/recorder:

_____/_____/_____

_____ Materials distributed

Teacher gives daily instructions

_____ Review of previous days words
Time: _____

_____ Introduction of each of (#) _____ new words
Time: _____

_____ Student guided practice
Time: _____

_____ Student independent practice
Time: _____

_____ Teacher monitors students and answers questions

_____ Collect materials

_____ Dismisses, or continues with other class assignments

Additional
Notes:_____
_____
_____
_____
_____
_____
_____

Day 1 Lesson Plan

Objectives:
1. to orient students to mnemonic instructional procedures
2. to teach weekly list of vocabulary words using mnemonic strategy materials

Objective 1	Materials
	   1. overhead transparencies
	   2. composition notebook
	   3. teacher script for introduction and demonstration
	Procedures
	   1. teacher will use the scripted introduction and explanation
	   2. students will take notes (keyword, definition, part of speech, description of picture) in note taking format

Objective 2	Materials
	   1. Teacher – overheads for weekly 10 words and script
	   2. Student – note taking format, practice renditions for each term, practice work in composition notebook.
	Procedures
	Teacher will introduce the strategy for each word using the script which requires student involvement.
	   1. Main points of strategy are addressed. Example – Teacher will reveal keyword (KW), part of speech, vocab. Word, and illustration, while discussing connections.
	   2. Students will be reminded to take notes as the information is given and viewed.
	   3. Teachers will log student participation in using note taking format and practice.
	Students
	   1. During instruction – will take notes as terms are revealed and respond orally as called upon in discussion.
	   2. After instruction – will complete guided practice in composition notebooks.
	   3. All work remains in composition notebooks that are labeled by student. (provided by researcher)
	Assessments
	   1. student participation during instruction (observation)
	   2. completion of note taking and guided practice

Day 2, 3, 4 Lesson Plan

Objectives:
1. to review vocabulary words from previous day's lesson
2. writing practice

Objective 1	Materials
	  1. composition notebook
	  2. overhead transparencies
	Procedures
	  1. oral review with visual clues as needed
	  3. Sample – teacher "to remember the meaning of…, think about the KW and what was happening in the picture… How did you remember…?"
	  4. Questioning continues using the same format for each vocab. Word.
	      a. Reveal vocab. Word
	      b. To remember what---means remember the KW for --- and what was happening in the picture.
	      c. What does----mean?
	      d. How did you remember the meaning for ---?

Objective 2	Materials
	  1. Student – with practice renditions for each term, practice work in composition notebook.
	Procedures
	Teacher will introduce the strategy for each writing and illustrating student samples for each vocab. word
	  1. Using practice renditions for each term, make your own, approximately 3 per day.
	Assessments
	  1. Student progress during individual work.
	  2. Completion of 3-4 vocab. words per day.

Day 5 Lesson Plan

Objectives:
1. free study
2. assessment

Objective 1	Materials • composition notebook Procedures • Students have 10 minutes to review the information before the quiz.

Objective 2	Materials • Weekly quiz Procedures • Teacher will read the directions prior to handing out the quiz. • Students complete quiz. • Tests will be collected and given to researcher.

Day 1 Lesson Plan

Objectives:
3. to orient students to instructional procedures
4. to teach weekly list of vocabulary words using traditional instruction with definitions

Objective 1	Materials
	  4. overhead transparencies
	  5. student class notebook
	  6. teacher script – not required
	    • Teacher may use the short introduction script as needed.
	Procedures
	  1. Teacher will introduce and explain vocabulary procedures.
	  2. Teacher will verify that all students know where to record work in their assigned class notebook.

Objective 2	Materials
	  3. Teacher – overheads for weekly 10 words and definitions
	    • Text becomes the script
	  4. Student – 2 column note taking and practice work in notebook.
	Procedures
	  1. Teacher
	    a. Will introduce the each vocab. word, definition and part of speech. (from transparency)
	    b. Each word will reveal definition, part of speech, pronunciation and read aloud. (Have students repeat orally.)
	    c. Log student participation in teacher record.
	  2. Students
	    a. During instruction
	      • Will be reminded to take notes as the information is given and viewed.
	      • Respond orally to questions
	      • Keep in notebook
	    b. After instruction
	      • Complete practice using notes
	      • Keep in notebook and label according to instructions.

	Assessments
	    3. student participation during instruction (general observation)
	    4. completion of note taking and guided practice

Day 2, 3, 4 Lesson Plan

Objectives:
3. to review vocabulary words from previous day's lesson
4. Practice activities using vocabulary words

Objective 1	Materials
	    3. notebook
	    4. overhead transparencies
	Procedures
	    2. Oral review with visual clues from transparencies from previous day (as needed).
	    3. Continue through vocab. words randomly
	        • Reveal each word orally
	        • Pronounce it and have student respond
	        • Naturally answer student questions

Objective 2	Materials
	    2. Teacher
	        • Transparences
	        • Text is script
	    3. Student
	        • Notebook
	        • Practice work
	Procedures
	  Teacher will review
	        • will have students write two sentences for each word in notebook (approximately 3-4 words per day).
	Assessments
	    3. Student progress during individual work.
	    4. Completion of 3-4 vocab. words per day.

Day 5 Lesson Plan

Objectives:
  3. free study
  4. assessment

Objective 1	Materials • composition notebook Procedures • Students have 10 minutes to review the information before the quiz.

Objective 2	Materials • Weekly quiz Procedures • Teacher will read the directions prior to handing out the quiz. • Students complete quiz. • Tests will be collected and given to researcher.

Teacher Attitude/Satisfaction Survey and Interview

Name_____

Directions: Using a scale of 1 to 5, circle the answer you feel best fits your opinion and observations.

1= strongly agree   2=agree   3=undecided   4=disagree   5=strongly disagree

1. Mnemonics helped me improve vocabulary instruction.

    1   2   3   4   5

2. Traditional instruction with terms and definitions helped me improve vocabulary instruction.

    1   2   3   4   5

3. I would like to use mnemonics in the future.

    1   2   3   4   5

4. I would rather use traditional instruction with terms and definitions in the future.

    1   2   3   4   5

5. Compared with traditional instruction with terms and definitions, mnemonics is better for teaching vocabulary.

    1   2   3   4   5

6. Compared with mnemonics instruction with terms and definitions, traditional instruction is better for teaching vocabulary.

    1   2   3   4   5

7. Students were actively engaged when using the mnemonic cartoons.

    1   2   3   4   5

8. Which type of instruction did you prefer for teaching vocabulary, mnemonics or traditional (circle one)? Tell why.

_____

_____

_____

9. Which type of instruction seemed easier for the delivery of new vocabulary, mnemonics or traditional (circle one)? Explain why.

_____

_____

_____

10. What did you enjoy most about teaching with mnemonics?

_____

_____

_____

11. What did you enjoy least about teaching with mnemonics?

_____

_____

_____

12. What did you students think about the mnemonic cartoons?

_____

_____

_____

13. According to your perception of class performance, did your student appear to recall more words with the mnemonics or with traditional instruction (circle one)? Explain why.

_____

_____

_____

14. Write any other comments that you think would be beneficial to know about mnemonics or vocabulary instruction, in general.

MNEMONIC CONDITION

Name_____   Teacher_____   Block_____

Directions: Circle the face that best describes your opinion. Answer each question to the best of your ability.

Agree =   ☺   Undecided= ☺   Disagree=   ☹

1. I liked English before this year.
   ☺   ☺   ☹
2. I like English this year.
   ☺   ☺   ☹
3. If you like English this year, describe here what you like about it.
   _____
   _____

4. If you do not like English this year, describe here what you do not like about it.
   _____
   _____

5. What activities help make learning vocabulary easier for you?
   _____
   _____

6. Vocabulary is easy for me.
   ☺   ☺   ☹
7. Vocabulary is difficult for me.
   ☺   ☺   ☹
8. I study before test and quizzes.
   ☺   ☺   ☹
9. If you study before test, what do you do?
   _____
   _____

10. What activities help you memorize vocabulary words?
    _____
    _____

11. I liked using the mnemonic cartoons.
   ☺   😐   ☹
12. The mnemonic cartoons were easy to use.
   ☺   😐   ☹
13. The mnemonic cartoons helped me learn the new vocabulary.
   ☺   😐   ☹
14. The mnemonic cartoons helped me do better on my vocabulary quizzes.
   ☺   😐   ☹
15. I remembered the keyword and cartoon picture when taking my vocabulary quiz.
   ☺   😐   ☹
16. Similar mnemonic cartoons could be used in other classes.
   ☺   😐   ☹
17. If you think similar mnemonic cartoons could be used in other classes, list which classes.

   _____

   _____

18. Describe what you liked best about using the mnemonic cartoons.

   _____

   _____

19. Describe what you liked least about using the mnemonic cartoons.

   _____

   _____

20. How did you remember the meaning of reign?

   _____

   _____

21. How did you remember the meaning of surmise?

   _____

   _____

22. How did you remember the meaning of wrath?

   _____

   _____

MNEMONIC CONDITION

Name_____   Teacher_____   Block_____

Directions: Circle the face that best describes your opinion. Answer each question to the best of your ability.

Agree =   ☺   Undecided= ☺   Disagree=   ☹

1. I liked English before this year.
    ☺   ☺   ☹
2. I like English this year.
    ☺   ☺   ☹
3. If you like English this year, describe here what you like about it.
    _____
    _____

4. If you do not like English this year, describe here what you do not like about it.
    _____
    _____

5. What activities help make learning vocabulary easier for you?
    _____
    _____

6. Vocabulary is easy for me.
    ☺   ☺   ☹
7. Vocabulary is difficult for me.
    ☺   ☺   ☹
8. I study before test and quizzes.
    ☺   ☺   ☹
9. If you study before test, what do you do?
    _____
    _____

10. What activities help you memorize vocabulary words?
    _____
    _____

11. I liked using the mnemonic cartoons.

☺   ☹   ☹

12. The mnemonic cartoons were easy to use.
    ☺   ☹   ☹

13. The mnemonic cartoons helped me learn the new vocabulary.
    ☺   ☹   ☹

14. The mnemonic cartoons helped me do better on my vocabulary quizzes.
    ☺   ☹   ☹

15. I remembered the keyword and cartoon picture when taking my vocabulary quiz.
    ☺   ☹   ☹

16. Similar mnemonic cartoons could be used in other classes.
    ☺   ☹   ☹

17. If you think similar mnemonic cartoons could be used in other classes, list which classes.

_____

_____

18. Describe what you liked best about using the mnemonic cartoons.

_____

_____

19. Describe what you liked least about using the mnemonic cartoons.

_____

_____

20. How did you remember the meaning of <u>nullify?</u>

_____

_____

21. How did you remember the meaning of <u>terse?</u>

_____

_____

22. How did you remember the meaning of <u>ebullience?</u>

_____

_____

TRADITIONAL CONDITION

Name_____ Teacher_____ Block_____

Directions: Circle the face that best describes your opinion. Answer each question to the best of your ability.

Agree =   ☺   Undecided= ☺   Disagree=   ☹

1. I liked English before this year.
    ☺   ☺   ☹
2. I like English this year.
    ☺   ☺   ☹
3. If you like English this year, describe here what you like about it.
    _____
    _____

4. If you do not like English this year, describe here what you do not like about it.
    _____
    _____

5. What activities help make learning vocabulary easier for you?
    _____
    _____

6. Vocabulary is easy for me.
    ☺   ☺   ☹
7. Vocabulary is difficult for me.
    ☺   ☺   ☹
8. I study before test and quizzes.
    ☺   ☺   ☹
9. If you study before test, what do you do?
    _____
    _____

10. What activities help you memorize new vocabulary words?
    _____
    _____

11. How did you remember the meaning of <u>gregarious?</u>

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_____

_____

12. How did you remember the meaning of <u>eloquent?</u>

_____

_____

13. How did you remember the meaning of <u>intrepid?</u>

_____

_____

TRADITIONAL CONDITION

Name_____   Teacher_____   Block_____

Directions: Circle the face that best describes your opinion. Answer each question to the best of your ability.

Agree =   ☺   Undecided= ☺   Disagree=   ☹

1. I liked English before this year.

☺   ☺   ☹

2. I like English this year.

☺   ☺   ☹

3. If you like English this year, describe here what you like about it.

_____

_____

4. If you do not like English this year, describe here what you do not like about it.

_____

_____

5. What activities help make learning vocabulary easier for you?

_____

_____

6. Vocabulary is easy for me.

☺   ☺   ☹

7. Vocabulary is difficult for me.

☺   ☺   ☹

8. I study before test and quizzes.

☺   ☺   ☹

9. If you study before test, what do you do?

_____

_____

10. What activities help you memorize new vocabulary words?

_____

_____

11. How did you remember the meaning of <u>reign?</u>

_____

_____

12. How did you remember the meaning of <u>augment?</u>

_____

_____

13. How did you remember the meaning of <u>surmise?</u>

_____

_____

Week 1

1. Ascribe
   (v) To attribute to a specific cause, source or origin
2. Mawkish
   (adj) Excessively sentimental
3. Raffish
   (adj) Cheaply vulgar in appearance, tawdry, disreputable
4. surmise
   (v) To guess, infer without evidence
5. Incessant (adj) Continuing without interruption; Nonstop
6. Latent (adj) Laying hidden or undeveloped, potential
7. Diffident
   (adj) Timid, lacking self confidence
8. Eminent
   (adj) Standing out, renowned, prominent
9. Requisite
   (adj) Requirement
10. Portend
    (v) Forecast, to warn as an omen

Week 2
1. prudent
    (adj) cautious, discreet, exercising good judgment
2. augment
    (v) to make or become greater
3. circumspect
    (adj) cautious, heedful of situation and potential
    consequences
4. defunct
    (adj) dead or inactive; having ceased to exist
5. succinct
    (adj) brief and to the point, concise, terse
6. ostensible
    (adj) appearing as such; offered as genuine or real
7. pliable
    (adj) receptive to change; easily persuaded or
    controlled; easily bent or twisted
8. adroit
    (adj) skillful, deft
9. reign
    (n) the exercise or possession of supreme power
10. diurnal
    (adj) occurring every day; during the daytime

Week 3
1. Ruminate
   (n) to ponder; to reflect upon
2. Intrepid
   (adj) fearless, bold
3. Seethe
   (v) to be agitated, as by rage; to churn and foam as if
   boiling
4. Eloquent
   (adj) extremely expressive in speech, writing or
   movement
5. Tantalize
   (v) to excite by exposing something desirable while
   keeping it out of reach
6. Demise
   (n) death, the end
7. Capitulate
   (v) to surrender under certain conditions; to give in
8. Confiscate
   (v) to seize
9. Depravity
   (n) extreme wickedness
10. Gregarious
   (adj) seeking and enjoying the company of others;
   sociable

Week 4

1. Elucidate
   (v) to make clear and explain fully
2. Enmity
   (n) hostility; deep - seated hatred
3. Palliate
   (v) to make seem less serious; to mitigate
4. Wrath
   (n) extreme violent rage
5. Pristine
   (adj) extremely pure; untouched
6. Hiatus
   (n) a gap or an interruption in space, time or
   continuity; a break
7. Incontrovertible
   (adj) not able to be "turned against" or disputed;
   certain; indisputable
8. Indolence
   (adj) lazy
9. Inundate
   (v) to overwhelm with abundance or excess; flood
10. Bolster
   (v) to support as in a group; to give a boost

Quiz 1

Name_____Block_____Teacher_____

Define each word in the space provided.

What is the meaning of…

1. ascribe

   _____

2. mawkish

   _____

3. raffish

   _____

4. surmise

   _____

5. incessant

   _____

6. latent

   _____

7. diffident

   _____

8. eminent

   _____

9. requisite

   _____

10. portend

   _____

Using the vocabulary words from above, fill in the
blanks. Each word is used only once, but you may need to
change the form of the word.

11. The audience fell silent when the _____ singers, later known as
    Destiny's Child, walked on stage.
12. Steve does not care for _____ birthday cards; he likes funny ones
    instead.
13. The _____ character had been seen at the murder and was taken
    in for questioning.
14. The physics professor _____ to the theory that what goes up must
    come down.
15. The teacher gave Allison and Karen a detention for their _____
    chatter in class.
16. Because the disease was in a _____ state, no one knew she was ill.
17. The _____ boy always sat alone in the cafeteria.
18. Successfully completing Spanish I is _____to taking Spanish
    II.
19. The dog let out a howl of dire _____.
20. Beginning with the very first date, Liz is good at _____ how a
    relationship will turn out.

Quiz 2
Name_____Block_____Teacher_____

Define each word in the space provided.

What is the meaning of…

1. prudent

_____

2. augment

_____

3. circumspect

_____

4. defunct

_____

5. succinct

_____

6. ostensible

_____

7. pliable

_____

8. adroit

_____

9. reign

_____

10. diurnal

_____

Using the vocabulary words from above, fill in the
blanks. Each word is used only once, but you may need to
change the form of the word.

11. Kaylan always wins at cards because he is so _____

    at counting the cards that have been played.

12. Many believe the king's _____ was strikingly enlightened.

13. Putty is a _____ material that can be easily shaped.

14. In his usual _____ manner, Rafael first assured himself against all

    losses before making a decision.

15. The President _____ his problems by denying his involvement in

    any wrong doing.

16. Devin decided it would be _____ to ignore the insult and to walk away

    from such a hateful girl.

17. Brad enjoys his _____ cup of coffee while he reads the newspaper.

18. The _____ purpose of the book is to improve the reader's vocabulary.

19. Benjamin Franklin's aphorisms are so _____ that they are still used today.

20. Latin is a _____ language in most of the world today.

Quiz 3

3

Name_____Block_____Teacher_____

Define each word in the space provided.

What is the meaning of…

1. ruminate

   _____

2. intrepid

   _____

3. seethe

   _____

4. eloquent

   _____

5. tantalize

   _____

6. demise

   _____

7. capitulate

   _____

8. confiscate

   _____

9. depravity

   _____

10. gregarious

   _____

```
Using the vocabulary words from above, fill in the
blanks. Each word is used only once, but you may need to
change the form of the word.
```

11. I could see my father start to _____ as he started to read the

    cell phone bill.

12. Garrett's _____ nature made him an enjoyable person to

    be around.

13. The bullfighter was _____ as he stood in the arena before the

    fierce bull.

14. Muhammad Ali was famous in the ring for his _____ toward

    opposing boxers.

15. Michael often _____ about the day when his car would win

    the Daytona 500.

16. Chris's broken leg led to the _____ of his football career.

17. After sending a rose everyday for three weeks, Kara finally

    _____ and married Levi.

18. In reality television, the contestant gave a moving, _____ speech as

    she won the challenge.

19. Shannon would _____ all the boys with her beauty but would

    never accept a date.

20. The teacher _____ Leigh's cell phone.

Quiz 4

Name_____Block_____Teacher_____

Define each word in the space provided.

What is the meaning of…

1. elucidate

   _____

2. enmity

   _____

3. palliate

   _____

4. wrath

   _____

5. pristine

   _____

6. hiatus

   _____

7. incontrovertible_____

   _____

8. indolence

   _____

9. inundate

   _____

10. bolster

   _____

Using the vocabulary words from above, fill in the
blanks. Each word is used only once, but you may need to
change the form of the word.

11. It is _____ that two plus two equals four.

12. Mike may get by in high school, but college professors will never put up with
such _____.

13. After the rains, the baseball fields were _____ with water.

14. After she had been caught cheating, Dina awaited the _____ of
the principal.

15. Those who know about the island keep it a secret because they want to continue
to enjoy its _____ beaches.

16. Coach Cower saw it was time to _____ his team, so he gave
them a pep talk.

17. Jasmine _____ her description of the assailant to the police
officer.

18. When she saw his new girlfriend, it was not easy to disguise her
_____.

19. The nurse _____ the patient's burns by applying cold, wet
bandages to the sensitive area.

20. Emily looked to Winter Break as a welcome _____ from the
drudgery of school work.

Appendix V: Answer Key

Week 1	Week 2
1. (v) To attribute to a specific cause, source or origin	1. (adj) cautious, discreet, exercising good judgment
2. (adj) Excessively sentimental	2. (v) to make or become greater
3. (adj) Cheaply vulgar in appearance, tawdry, disreputable	3. (adj) cautious, heedful of situation and potential consequences
4. (v) To guess, infer without evidence	4. (adj) dead or inactive; having ceased to exist
5. (adj) Continuing without interruption; Nonstop	5. (adj) brief and to the point, concise, terse
6. (adj) Laying hidden or undeveloped, potential	6. (adj) appearing as such; offered as genuine or real
7. (adj) Timid, lacking self confidence	7. (adj) receptive to change; easily persuaded or controlled; easily bent or twisted
8. (adj) Standing out, renowned, prominent	8. (adj) skillful, deft
9. (adj) Requirement	9. (n) the exercise or possession of supreme power
10. (v) Forecast, to warn as an omen	10. (adj) occurring every day; during the daytime
11. Eminent	11. Adroit
12. Mawkish	12. Reign
13. Raffish	13. Pliable
14. Ascribes	14. Circumspect
15. Incessant	15. Augmented
16. Latent	16. Prudent
17. Diffident	17. Diurnal
18. Requisite	18. Ostensible
19. Portend	19. Succinct
20. surmising	20. Defunct

Week 3	Week 4
1. (n) to ponder; to reflect upon	1. (v) to make clear and explain fully
2. (adj) fearless, bold	2. (n) hostility; deep seated hatred
3. (v) to be agitated, as by rage; to churn and foam as if boiling	3. (v) to make seem less serious; to mitigate
4. (adj) extremely expressive in speech, writing or movement	4. (n) extreme violent rage
5. (v) to excite by exposing something desirable while keeping it out of reach	5. (adj) extremely pure; untouched
	6. (n) a gap or an interruption in space, time or continuity; a break
6. (n) death, the end	7. (adj) not able to be "turned against" or disputed; certain; indisputable
7. (v) to surrender under certain conditions; to give in	8. (adj) lazy
8. (v) to seize	9. (v) to overwhelm with abundance or excess; flood
9. (n) extreme wickedness	10. (v) to support as in a group; to give a boost
10. (adj) seeking and enjoying the company of others; sociable	11. Incontrovertible
11. Seethe	12. Indolence
12. Gregarious	13. Inundated
13. Intrepid	14. Wrath
14. Depravity	15. Pristine
15. Ruminated	16. Bolster
16. Demise	17. Elucidated
17. Capitulated	18. Enmity
18. Eloquent	19. Palliated
19. Tantalize	20. hiatus
20. confiscated	

Appendix W: Knowledge Survey Pretest

Name: _____   Block: _____ Teacher: _____

Study ID_____

Knowledge Survey Pretest

This knowledge survey will not be graded and will not influence your grade in this class.
DIRECTIONS: Vocabulary words are listed. Identify the choice that best defines the word. If you are unsure, it is okay to guess.

_____   1) ascribe:
    a.   sentimental   c.   vulgar in appearance
    b.   to attribute to a specific cause   d.   to infer (something) without evidence

_____   2) mawkish:
    a.   sentimental   c.   vulgar in appearance
    b.   to attribute to a specific cause   d.   to infer (something) without evidence

_____   3) raffish:
    a.   sentimental   c.   vulgar in appearance
    b.   to attribute to a specific cause   d.   to infer (something) without evidence

_____   4) surmise:
    a.   sentimental   c.   vulgar in appearance
    b.   to attribute to a specific cause   d.   to infer (something) without evidence

_____   5) incessant:
    a.   timid   c.   standing out, prominent
    b.   laying hidden or undeveloped   d.   nonstop

_____   6) latent:
    a.   timid   c.   standing out, prominent
    b.   laying hidden or undeveloped   d.   nonstop

_____   7) diffident:
    a.   timid   c.   standing out, prominent
    b.   laying hidden or undeveloped   d.   nonstop

_____   8) eminent:
    a.   timid   c.   standing out, prominent
    b.   laying hidden or undeveloped   d.   nonstop

_____   9) requisite:
    a.   origin   c.   requirement
    b.   cheaply vulgar   d.   forecast, to warn as an omen

_____ 10) portend:
    a.   origin   c.   requirement
    b.   cheaply vulgar   d.   forecast, to warn as an omen

1

_____ 11) prudent:
    a. cautious, discreet
    b. inactive, dead
    c. to make or become greater
    d. heedful of situations and potential consequences

_____ 12) augment:
    a. cautious, discreet
    b. inactive, dead
    c. to make or become greater
    d. heedful of situations and potential consequences

_____ 13) circumspect:
    a. cautious, discreet
    b. inactive, dead
    c. to make or become greater
    d. heedful of situations and potential consequences

_____ 14) defunct:
    a. cautious, discreet
    b. inactive, dead
    c. to make or become greater
    d. heedful of situations and potential consequences

_____ 15) succinct:
    a. brief and to the point
    b. offered as genuine or real
    c. easily bent or twisted, persuaded
    d. skillful

_____ 16) ostensible:
    a. brief and to the point
    b. offered as genuine or real
    c. easily bent or twisted, persuaded
    d. skillful

_____ 17) succinct:
    a. brief and to the point
    b. offered as genuine or real
    c. easily bent or twisted, persuaded
    d. skillful

_____ 18) adroit:
    a. brief and to the point
    b. offered as genuine or real
    c. easily bent or twisted, persuaded
    d. skillful

_____ 19) reign:
    a. brief and to the point
    b. offered as genuine or real
    c. possession of supreme power
    d. occuring every day, during the day

_____ 20) diurnal:
    a. brief and to the point
    b. skillful
    c. easily bent or twisted, persuaded
    d. occurring every day, daytime

_____ 21) gregarious:
    a. to agitated as by rage
    b. to reflect upon, ponder
    c. fearless
    d. sociable

_____ 22) intrepid:
    a. to agitated as by rage
    b. to reflect upon, ponder
    c. fearless
    d. sociable

2

_____ 23) runinate:
    a.   to agitated as by rage   c.   fearless
    b.   to reflect upon, ponder   d.   sociable

_____ 24) seethe:
    a.   to agitated as by rage   c.   fearless
    b.   to reflect upon, ponder   d.   sociable

_____ 25) eloquent:
    a.   the end, death   c.   extremely expressive in speech, writing or movement
    b.   to give in   d.   to excite by exposing something desirable while keeping it out of reach

_____ 26) capitulate:
    a.   the end, death   c.   extremely expressive in speech, writing or movement
    b.   to give in   d.   to excite by exposing something desirable while keeping it out of reach

_____ 27) demise:
    a.   the end, death   c.   extremely expressive in speech, writing or movement
    b.   to give in   d.   to excite by exposing something desirable while keeping it out of reach

_____ 28) tantalize:
    a.   the end, death   c.   extremely expressive in speech, writing or movement
    b.   to give in   d.   to excite by exposing something desirable while keeping it out of reach

_____ 29) confiscate:
    a.   the end, death   c.   to seize
    b.   to give in   d.   extreme wickedness

_____ 30) depravity:
    a.   the end, death   c.   to seize
    b.   to give in   d.   extreme wickedness

_____ 31) elucidate:
    a.   hostility   c.   extreme or violent rage
    b.   to make clear and explain fully   d.   to make seem less serious

_____ 32) enmity:
    a.   hostility   c.   extreme or violent rage
    b.   to make clear and explain fully   d.   to make seem less serious

_____ 33) palliate:
    a.   hostility   c.   extreme or violent rage
    b.   to make clear and explain fully   d.   to make seem less serious

3

____ 34) wrath:
   a. hostility
   b. to make clear and explain fully

   c. extreme or violent rage
   d. to make seem less serious

____ 35) pristine:
   a. extremely pure
   b. a gap or interrruption in space, time or continuity

   c. certain, indisputable
   d. lazy

____ 36) indolence:
   a. extremely pure
   b. a gap or interrruption in space, time or continuity

   c. certain, indisputable
   d. lazy

____ 37) hiatus:
   a. extremely pure
   b. a gap or interrruption in space, time or continuity

   c. certain, indisputable
   d. lazy

____ 38) incontrovertible:
   a. extremely pure
   b. a gap or interrruption in space, time or continuity

   c. certain, indisputable
   d. lazy

____ 39) inundate:
   a. to support as in a group, to give a boost
   b. a gap or interrruption in space, time or continuity

   c. to overhelm with abundance or excess
   d. lazy

____ 40) bolster:
   a. extremely pure
   b. to support as in a group, to give a boost

   c. certain, indisputable
   d. lazy

4

Knowledge Survey Pretest
Answer Section

MULTIPLE CHOICE

1)	ANS: B	PTS: 1
2)	ANS: A	PTS: 1
3)	ANS: C	PTS: 1
4)	ANS: D	PTS: 1
5)	ANS: D	PTS: 1
6)	ANS: B	PTS: 1
7)	ANS: A	PTS: 1
8)	ANS: C	PTS: 1
9)	ANS: C	PTS: 1
10)	ANS: D	PTS: 1
11)	ANS: A	PTS: 1
12)	ANS: C	PTS: 1
13)	ANS: D	PTS: 1
14)	ANS: B	PTS: 1
15)	ANS: A	PTS: 1
16)	ANS: B	PTS: 1
17)	ANS: C	PTS: 1
18)	ANS: D	PTS: 1
19)	ANS: C	PTS: 1
20)	ANS: D	PTS: 1
21)	ANS: D	PTS: 1
22)	ANS: C	PTS: 1
23)	ANS: B	PTS: 1
24)	ANS: A	PTS: 1
25)	ANS: C	PTS: 1
26)	ANS: B	PTS: 1
27)	ANS: A	PTS: 1
28)	ANS: D	PTS: 1
29)	ANS: C	PTS: 1
30)	ANS: D	PTS: 1
31)	ANS: B	PTS: 1
32)	ANS: A	PTS: 1
33)	ANS: D	PTS: 1
34)	ANS: C	PTS: 1
35)	ANS: A	PTS: 1
36)	ANS: D	PTS: 1
37)	ANS: B	PTS: 1
38)	ANS: C	PTS: 1
39)	ANS: C	PTS: 1

1

40) ANS: B   PTS: 1

2

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Appendix Y: Knowledge Vocabulary Posttest

Study ID_____

Name: _____   **Block:** _____ **Teacher:** _____

Vocabulary Posttest

DIRECTIONS: Some of the vocabulary words you learned in this unit are listed. Identify the choice that best defines the word. If you are unsure, it is okay to guess.

____ 1) ascribe:
      a. sentimental   c. vulgar in appearance
      b. to attribute to a specific cause   d. to infer (something) without evidence

____ 2) mawkish:
      a. sentimental   c. vulgar in appearance
      b. to attribute to a specific cause   d. to infer (something) without evidence

____ 3) raffish:
      a. sentimental   c. vulgar in appearance
      b. to attribute to a specific cause   d. to infer (something) without evidence

____ 4) eminent:
      a. timid   c. standing out, prominent
      b. laying hidden or undeveloped   d. nonstop

____ 5) prudent:
      a. cautious, discreet   c. to make or become greater
      b. inactive, dead   d. heedful of situations and potential
                                                 consequences

____ 6) augment:
      a. cautious, discreet   c. to make or become greater
      b. inactive, dead   d. heedful of situations and potential
                                                 consequences

____ 7) circumspect:
      a. cautious, discreet   c. to make or become greater
      b. inactive, dead   d. heedful of situations and potential
                                                 consequences

____ 8) reign:
      a. brief and to the point   c. possession of supreme power
      b. offered as genuine or real   d. occuring every day, during the day

____ 9) gregarious:
      a. to agitated as by rage   c. fearless
      b. to reflect upon, ponder   d. sociable

____ 10) intrepid:
      a. to agitated as by rage   c. fearless
      b. to reflect upon, ponder   d. sociable

1

_____ 11) seethe:
  a. to agitated as by rage
  b. to reflect upon, ponder

  c. fearless
  d. sociable

_____ 12) eloquent:
  a. the end, death
  b. to give in

  c. extremely expressive in speech, writing or movement
  d. to excite by exposing something desirable while keeping it out of reach

_____ 13) pristine:
  a. extremely pure
  b. a gap or interrruption in space, time or continuity

  c. certain, indisputable
  d. lazy

_____ 14) indolence:
  a. extremely pure
  b. a gap or interrruption in space, time or continuity

  c. certain, indisputable
  d. lazy

_____ 15) hiatus:
  a. extremely pure
  b. a gap or interrruption in space, time or continuity

  c. certain, indisputable
  d. lazy

_____ 16) incontrovertible:
  a. extremely pure
  b. a gap or interrruption in space, time or continuity

  c. certain, indisputable
  d. lazy

2

Appendix Z: Knowledge Vocabulary Posttest Answer Key

Vocabulary Posttest
Answer Section

MULTIPLE CHOICE

1) ANS: B	PTS:	1
2) ANS: A	PTS:	1
3) ANS: C	PTS:	1
4) ANS: C	PTS:	1
5) ANS: A	PTS:	1
6) ANS: C	PTS:	1
7) ANS: D	PTS:	1
8) ANS: C	PTS:	1
9) ANS: D	PTS:	1
10) ANS: C	PTS:	1
11) ANS: A	PTS:	1
12) ANS: C	PTS:	1
13) ANS: A	PTS:	1
14) ANS: D	PTS:	1
15) ANS: B	PTS:	1
16) ANS: C	PTS:	1

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