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Using Keyword Mnemonics to Develop Secondary Students' Vocabularies: A Teacher's Action Research

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Vocabulary has a critical place in literacy instruction. Research clearly points to a strong relationship between vocabulary knowledge and reading comprehension and most agree that the larger one's base vocabulary, the better one's ability to comprehend text. Students who are able readers continue to grow their vocabularies while students who are struggling readers do not. In an effort to bridge this gap, a secondary English teacher using action research methodology explored keyword mnemonics as a way to actively engage her students in learning new vocabulary. The results indicate that the keyword mnemonic method was effective with her students.

"Ms.R! How's it going?" Carlos (all names of individuals and schools are pseudonyms) asked, appearing suddenly from the throng of freshmen milling about during the seven-minute class change. Carlos was a sophomore and an anomaly among the students at Winsor Ninth Grade School, a freshman campus in an urban school district in the southwest. He had been a student in my English I class the year before and sometimes made his way upstairs when he came on campus each morning to take an engineering class that was not offered at the senior high school. "Is that a vocabulary pretest?" he asked, peering over my shoulder at the stack of papers I was passing out to students as they entered the room.

"It's Thursday, isn't it?" I replied sheepishly, suddenly a little embarrassed about the predictability of my class.

"Let me see," he said, looking over the familiar format of the self-checking pretest, searching the row of definitions. "... agreeable ... AMENABLE ... unsteady ... PRECARIOUS ... standard of judgment ... CRITERION ..." To his delight and my

amazement, one by one, he went over the list of definitions, recalling every vocabulary word from the pretest that he had learned in my class over one year ago.

Introduction

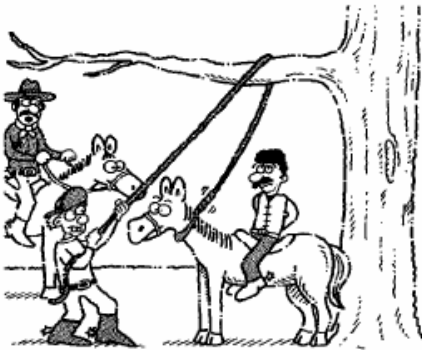
Janet Allen (1999) succinctly sums up the pedagogical issues involved in vocabulary instruction when she states “vocabulary instruction is one of those educational arenas in which research and best practice are elusive” (p. 1). Allen’s confession that early in her career she had taught vocabulary in the same way she had been taught, assigning lists of words, requiring students to look up words in the dictionary and write sentences, hit close to my own teaching reality. I too had taught vocabulary the way I had been “taught.” The dictionary was our main tool, and I was concerned by my students’ inability to find the most logical definition, recognize its part of speech and use it correctly in a sentence. No one taught me the details of vocabulary and yet I figured out the rules—why couldn’t my students do it?

Once I began to focus on the cause of my students’ vocabulary issues and began reflecting on my own vocabulary acquisition, I realized that, while I was able to retain some knowledge of the words I had learned in this manner, my learning experiences were not the norm. Most students are unable to retain vocabulary taught by “the dictionary method” to the extent that it becomes part of their personal vocabulary. Even if the student studies the definitions long enough to do well on the weekly test, rarely is the student able to sustain his or her knowledge of the word unless provided long-term reinforcement (Allen, 1999; Beck, McKeown, & Kucan, 2002). With this “hit-or-miss” type of instruction, students rarely move beyond Kameenui’s first level of vocabulary instruction, verbal association knowledge (Allen, 1999).

A few years ago when the English department at my school decided to implement an SAT vocabulary “program,” it was the wake-up call I needed to send me looking for a different way to teach supplementary vocabulary. Like Janet Allen, I had given up teaching vocabulary for a number of years. I knew that the research indicated that students did not learn well with lists, definitions and obligatory sentences (Miller & Gildea, 1987; Nagy & Scott, 2000; Scott & Nagy, 1997), so I had stopped teaching it, hoping that my students would pick up what vocabulary they needed through their reading. When our school gave us a list of SAT words to teach at each grade level, I set aside my pedagogical misgivings, gave the list of words to my students and taught them using dictionary definitions and sentences.

It wasn’t until the following year, after I had spent a summer reflecting on my practice and its effect in my students’ achievement, that I began to reformulate my vocabulary approach. Again, I used the school-prescribed words from the freshman portion of the SAT. Although I used the same reinforcement activities (write definition...write sentences) as with the juniors, the

OBTUSE
(ob tuse)
insensitive; block-headed,
slow in comprehension
Link: NOOSE



“Don’t be **OBTUSE**, the horse-thief gets the **NOOSE**, not the horse.”

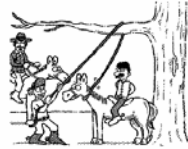





- ❑ Hazel was so **OBTUSE** she thought a watched pot of water never boils.
- ❑ The **OBTUSENESS** of some people is due to their unwillingness to accept new ideas.
- ❑ Don’t pretend to be so **OBTUSE**. You know the idea of business investing is to buy low and sell high.

Figure 1. Example of a vocabulary cartoon from Burchers, Burchers, & Burchers (1997). Used with permission of the authors

freshmen were less successful. I was desperate for help. So, when I received a card in the mail offering me a free copy of the SAT vocabulary book *Vocabulary Cartoons* (Burchers, Burchers, & Burchers, 1997) which used cartoons and keyword mnemonics to introduce words, I gladly requested a copy.

When I received the book, I immediately saw how using the cartoons could benefit my students in acquiring new vocabulary. For each word in the book, the learner is provided with a simple definition(s), the pronunciation, a link (keyword), a humorous cartoon and caption, and several other sentences with the word used in context (see Figure 1 for an example). I began to use these cartoons as part of a systematic supplementary SAT vocabulary program in my classroom, an approach that involved use of keyword mnemonics as an introductory activity to introduce the vocabulary words and reinforcement activities such as questioning tasks, puzzles, verbal wordplay, and games in addition to use as a regular part of our classroom discourse. In adapting the vocabulary cartoons to introduce the words, I did not use the cartoons exactly as they were used in the book. My students worked for the meanings. Using the blackline masters purchased for our school, I manipulated each cartoon page so that I was able to fit ten cartoons with the definitions removed on the front and back of a page along with a scrambled list of definitions (see Figure 2 for an example). As a warm-up at the beginning of the period each Monday, my students would use the context clues from the cartoons, the captions below the cartoons and the ancillary sentences to help them determine the correct definition. Each day after that, they received reinforcement activities such as puzzles, other cartoon activities, graphic organizers, and analogy activities.

Vocabulary 8

<p style="text-align: center; font-weight: bold;">1.</p>  <p style="font-size: small;">"Don't be OBTUSE, the horse that gets the NOZZLE and the horse."</p> <ul style="list-style-type: none"> □ Head was so OBTUSE she thought a washed pot of water never both. □ The OBTUSINESS of some people is due to their unwillingness to accept new ideas. □ Don't pretend to be so OBTUSE. You know the idea of business investing is to buy low and sell high. 	<p style="text-align: center; font-weight: bold;">2.</p>  <p style="font-size: small;">"An OCTOPUS OCCUPYING the PANTS."</p> <ul style="list-style-type: none"> □ Robert and Liz Myrtle have been OCCUPANTS of their Fifth Avenue apartment for thirty years. □ When the police arrived, they demanded to know the name of the OCCUPANT. □ Many yards habitats are OCCUPIED by intelligence makes who item beyond the main OCCUPANTS.
<p style="text-align: center; font-weight: bold;">4.</p>  <p style="font-size: small;">"FJORDS in a FJORD."</p> <ul style="list-style-type: none"> □ Norway and New Zealand are two countries noted for having the most scenic FJORDS in the world. □ FJORDS are generally deep so that large cruise ships have more than enough water to navigate up their length. □ The Grand Canyon could be the grandest FJORD of all, if only it were on the coast with an inlet from the sea. 	<p style="text-align: center; font-weight: bold;">3.</p>  <p style="font-size: small;">"Folks in JEANS are very CONGENIAL."</p> <ul style="list-style-type: none"> □ Dr. Armstrong was very CONGENIAL, always a smile and a kind word for his patients, and candies for the children. □ Miss Florida was voted Miss CONGENIALITY in the Miss America pageant. □ The atmosphere at the property appraiser's office is CONGENIAL. Everyone enjoys their job, and visitors are welcome at any time.
<p style="text-align: center; font-weight: bold;">5.</p>  <p style="font-size: small;">"Jim ASPIRED to ASPIRE early and become a man of leisure."</p> <ul style="list-style-type: none"> □ Tim ASPIRED to be the valedictorian of his class at graduation and studied hard to reach that goal. □ The counselor told Jack's parents that his problem in school was he didn't ASPIRE for anything. He had no goals or career direction. □ As a young child, General Carter had ASPIRED to become a musician, but later decided to become a general instead. 	<p style="text-align: center; font-weight: bold;">6.</p>  <p style="font-size: small;">"It's HARDER to be a MARTYR."</p> <ul style="list-style-type: none"> □ She was a professional MARTYR, all-suffering for her children, or so she would tell them ten times a day. □ Joan of Arc was undoubtedly the most famous MARTYR in modern history, burned at the stake because she refused to go against her beliefs. □ Jack was a MARTYR to his job; he worked seven days a week and rarely took a day off. <p style="font-size: x-small; text-align: center;">from Vocabulary Cartoons Vocabulary Cartoons</p>

Vocabulary 8-b


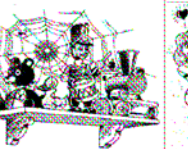


<p style="text-align: center; font-weight: bold;">7.</p>  <p style="font-size: small;">"It pays to STAY CHIMNEY on the edge of a CHIMNEY."</p> <ul style="list-style-type: none"> □ Charles was a CHIMNEY of strength, always there to fix my motor when... □ When Joan is considered a CHIMNEY of military learning, a top really understood what you were so indicated that now general attended West Point. □ There are many ancient CHIMNEYS in Spain, they are among the antiquities most valued by visitors. 	<p style="text-align: center; font-weight: bold;">8.</p>  <p style="font-size: small;">"All consent with one, the CONSENSUS were in the CONSENSUS."</p> <ul style="list-style-type: none"> □ Even since Jack's dog died, the hole fellow has not touched his own, helping around the after day to the CONSENSUS. □ The theme that we were required in the Hong Kong side near the square, our ship-billing as the CONSENSUS without the fastest CONSENSUS to the end of our road. 	<p style="text-align: center; font-weight: bold;">9.</p>  <p style="font-size: small;">"We are in CONSENSUS, the CONSENSUS."</p> <ul style="list-style-type: none"> □ After taking a CONSENSUS of the computer program, the bill to legislate teacher failed to pass. □ The CONSENSUS of the faculty was that no more club-dogs were to be served at the school lunch. □ A CONSENSUS to serve about a statistic, a section more important signs.
<p style="font-weight: bold;">10.</p>  <p style="font-size: small;">"Even an ASPIRE MARTYR will their needs LATITUDE."</p> <ul style="list-style-type: none"> □ Everything the world expected about the supposed plane disaster never happened. It was a bunch of MARTYR by accident's permission. □ Children have great imaginations, and often MARTYR about ghosts that supposedly scare them every and other worse than or else with them. 		
<p style="font-size: small;">Directions: Write the root word at the top of the block. Match the correct definition to the block and write the complete definition at the top of each block.</p> <ul style="list-style-type: none"> • something one hopes to achieve; goal • block-headed; slow in comprehension; insensitive • general agreement • to talk nonsensically • a long narrow inlet from the sea between steep cliffs or hills • someone willing to sacrifice for a cause; one who pretends suffering to gain sympathy • pleasant to be around; social, agreeable • condition of inhabiting; one who has certain rights to or control over the premises he lives in • a fortress overlooking a city; a stronghold • a period or condition of depression or inactivity <p style="font-size: x-small; text-align: right;">from Vocabulary Cartoons Vocabulary Cartoons</p>		

Figure 2: Example of manipulated cartoon page with definitions removed along with a scrambled list of definitions.

Students were also encouraged to use the words within the context of their oral and written discourse. They were given additional points on their vocabulary quizzes when they brought in index cards with examples of how the words were used in their everyday lives. Students regularly wrote down sentences or phrases on notecards whenever they encountered the words in conversation, in their reading, on television, on the radio, and in song lyrics and discussed their encounters with the vocabulary with their peers before placing their cards on a pocket chart on the wall of the room for their peers to reference. I also created word cards with the cartoons and hung them from the ceiling along the perimeter of the room, providing an easy reference for them as they wrote and regularly witnessed students searching the wall for just the right word when they were drafting a composition. For the next 9 years my students were very successful learning and retaining words using this keyword mnemonic vocabulary instructional method.

Reviewing the Literature on Mnemonics

As I began to see student success, I wanted to understand why this method was so effective and began to review the research literature. I discovered that mnemonic strategies have been used for years to aid in recall (Scruggs & Mastropieri, 1990). Experimental research on the effects of mnemonics on recall began in the late 1960s and research began on the practical applications of mnemonics a decade later (Pressley, Levin, & Delaney, 1982).

In vocabulary instruction, the use of keyword mnemonics consists of an acoustical keyword and an associated image which help the learner to “facilitat(e) the encoding of information for easier retrieval (Mastropieri, Scruggs, & Levin, 1985, p. 39). Researchers have explored the efficacy of mnemonics with a variety of groups, examining both immediate and long-term retention, and with mnemonic materials developed by teachers, students and experts. The overall findings have been mixed, with some researchers documenting a benefit to immediate recall but no benefit in long-term retention (Wang & Thomas, 1995; Wang, Thomas, Inzana, & Primecerio, 1993).

However, consistently positive results have been demonstrated on immediate recall (Atkinson, 1975; Wang & Thomas, 1995; Wang et al, 1993); with second language learners (Atkinson, 1975); gifted and talented learners (Carrier, Karbo, Kindem, Legisa, & Newstrom, 1983; Veit, Scruggs, & Mastropieri, 1986); students with learning disabilities (Mastropieri, Emerick, & Scruggs, 1988; Scruggs, Mastropieri, Brigham, & Sullivan, 1992); and commercially prepared materials (Mastropieri, Scruggs, Whittaker, & Bakken, 1994; Mastropieri, Sweda, & Scruggs, 2000; Scruggs & Mastropieri, 1985). Studies examining student perceptions of mnemonic vocabulary activities are few, but those few have shown a favorable response from students (Scruggs & Mastropieri, 1991; Scruggs, Mastropieri, McLoone, Levin, & Morrison, 1987). In a post-study questionnaire in their keyword strategy study measuring the ability of students to measure mineral attributes, Scruggs, et al. (1987) found that most students with learning disabilities involved in the keyword condition reported that they believed the keyword strategy was helpful and rated it to be more helpful than did the non-keyword group members, and they found that students not only find the keyword method helpful in learning, but also easier to use than other methods and report that they would use the strategy again. While the most obvious curriculum use for the keyword method is in vocabulary acquisition of both first language vocabulary and second language vocabulary, there are other adaptations to the keyword method, especially in teaching and learning science and social studies concepts and

terminology as well as prose learning tasks (e.g., Fulk, Mastropieri, & Scruggs, 1992; Mastropieri, Scruggs, & Levin, 1987). Mastropieri, Scruggs, & Levin (1987) found that students with learning disabilities (LD) benefited from mnemonic images when reading from a text about dinosaur extinction. They also showed success on a mnemonic based activity mapping out North American battles (Scruggs, Mastropieri, Brigham, and Sullivan, 1992). In a teacher-conducted study, science concepts were taught to students with behavior disorders over the course of several days with positive outcomes (Mastropieri, Emerick, & Scruggs, 1988). In a mnemonic combination treatment, students with LD were successfully taught three different concepts about dinosaurs and their possible reasons for extinction (Veit, Scruggs, & Mastropieri, 1986). Additionally, students with learning disabilities were taught multiple attributes using the keyword method indicating the superiority of the keyword strategy for quickly learning “novel factual associations” (Scruggs, Mastropieri, & Levin, 1985).

Nine years after I began using keyword mnemonics in my classroom to teach vocabulary, I left the ninth grade campus to become the language arts skills specialist at Hapberg Senior High School. My principal, recognizing that our students needed extra support with the kind of vocabulary words being tested on the SAT, asked that our department adopt a uniform SAT vocabulary development program that would be used in addition to the vocabulary instruction taking place within the regular literature program. Because my students had experienced success using keyword mnemonics and because our school had previously purchased the rights to reproduce the cartoons that I had been using, I suggested that we use that approach. Despite my sharing the published research in support of keyword mnemonics with the English faculty, many of the teachers were skeptical. They wanted to know if this method would work with their students and would the students retain the words they were learning. These were important questions to ask and ones I could only answer using my own students. Patterson and Shannon (1993) and many others (Arhar, Holly, & Kasten, 2001; Dana & Yendol-Silva, 2003; Hendricks, 2006; Hubbard & Power, 1999; Kinchloe, 1991; Mills, 2007; Stringer, 2004) point out that effective teachers are reflective about the learning that is taking place in their classrooms, seek out opportunities for inquiry, and make pedagogical changes based on classroom experiences and their findings. I knew from the experiences in my classroom that the method was successful, but, while I had initial success with my own students, my greatest concern was long-term retention. Because the teachers in my building were being required to use keyword mnemonics to introduce vocabulary words to their students, I wanted to provide them with justification for using this technique and some support that using keyword mnemonics would facilitate both vocabulary acquisition and long-term retention in their classrooms.

To explore long-term retention (at least as it pertained to my former students) I embarked on an action research project using junior and senior students who had received vocabulary instruction using the keyword mnemonic method in my classes as freshmen. By examining my former students’ long-term retention of the SAT vocabulary words they learned as freshmen, I hoped to persuade the teachers I worked with that the keyword mnemonic method was effective.

Methodology

Participants

I selected a group of 13 high school juniors and seniors whom I had taught as freshmen to test their retention rates for the words we had learned in our supplementary SAT vocabulary

program. These former students, 6 females and 7 males, were chosen using a stratified purposeful sampling process (Gall, Gall, & Borg, 2007), pulling a heterogeneous group enrolled in regular, honors and AP English III and English IV classes. I had maintained a good relationship with these students, so all of them were cooperative when they were called together for our three-hour session that occurred during the school day. I was unable to pull a corresponding control group of students who had learned the same words utilizing another method because cartoon mnemonics was the only method used to introduce the words in my classroom and in other classrooms on the campus.

Procedures

All data collection took place in a three-hour period in an uncontrolled environment with all 13 students and the teacher researcher present. To begin data collection, each student was given a questionnaire asking specific questions concerning their attitudes about reading so that I could examine relationships between their reading or non-reading and retention rate. I followed this up with a check sheet listing all 130 SAT words we had covered in the eighteen-week period when they were my students. On this sheet, students rated their knowledge of each word using a scale based on Dale's (1965) four stages of word knowledge with an added component for knowledge of keywords (Beck, McKeown, & Kucan, 2002). This word scale asks students to rate each word as 1) know it well, can explain it, use it; (2) know something about it, can relate it to a situation; (3) can remember the cartoon and keyword; (4) have seen or heard the word; (5) do not know the word. The words on the checklist were presented in the order in which they were originally learned.

Next, each student was given a five-section 100-question multiple-choice test covering all 130 SAT words learned during the eighteen weeks. Each section contained 20 questions each. Sections one, three and four contained distractors. These distractors included answers that are similar to the correct answer, answers that are opposites, and answers that were clearly incorrect. Section one required students to choose the correct definition for the word from the five definitions provided. Section two asked that students match words with its synonym or antonym. In section three, students completed a sentence with the correct word. In section four, students had to choose the word that did not belong in a set of four words. Section five required students to complete a sentence with the correct word pair (see Appendix for an example of each item type). After the students completed the test, they received 15 minutes to review the cartoons and keywords they learned as freshmen. Immediately following this, they took the test again to see if the review had impacted their memories.

Results

With no review, the average retention rate was 73.6%. After the fifteen minute review, the retest average was 82.5%. The checklist indicated that the words students had learned in the first nine weeks were retained at a higher rate than those they learned in the second nine weeks.

Discussion

These results indicate to me that this keyword mnemonic method is effective with my students and justifies my continued use as a supplementary vocabulary instructional method—

one that is used in addition to the regular word work we do within our literature study. Though it has been a successful vocabulary approach for me, it is a time-intensive endeavor. The commercially available SAT vocabulary cartoons lessen preparation time for the teacher. However, when adapting this approach with students who need to broaden their knowledge of basic vocabulary such as students with limited English proficiency, the preparation time to develop cartoons and definitions that are specific to their needs is significant. One way to ameliorate the preparation issue is to invite students to create their own vocabulary cartoons to illustrate word connections. This type of student engagement results in both a deeper involvement with individual words and raises the general awareness of words in their environment.

Implications for Future Study

Although the purpose of this study was to examine long-term retention of words introduced utilizing cartoon keywords, another avenue for exploration is to examine the use of student's keywords in their own writing. Can students who recall keywords use them appropriately in their writing? I will continue to explore the keyword method's effectiveness both in students' long-term recall and their use in writing by enlisting the research support of some of my colleagues and their classes. In addition I would like to explore teacher factors such as affect and enthusiasm on retention, the effectiveness of this approach on students with learning differences, and the effect of specific reinforcement activities used in conjunction with keyword mnemonics.

Vocabulary has a critical place in literacy instruction. Research clearly points to a strong relationship between vocabulary knowledge and reading comprehension and most agree that the larger one's base vocabulary, the better one's ability to comprehend text (Carlisle, 1993). Our struggling readers have weak vocabularies, and given how little they read, are unlikely to acquire a vocabulary through reading that will help improve their ability to read and comprehend text. Nagy and Anderson (1984) estimate that our lowest ability readers read 100,000 words per year compared to ten times that number for average readers and 100 times that number for prolific readers (Carlisle, 1993). Nagy and Herman (1987) estimate that average readers in the middle grades may attain as many as 1,000 words a year from their reading (Carlisle, 1993). Readers who struggle retain far fewer words.

Limitations

There are obvious limitations to this teacher research study. The lack of a strict research protocol, randomization, and a control group with which to generate comparisons make it impossible to generalize the findings beyond my students. In addition, the limited number of participants as well as the lack of statistical procedures that would allow the reader to make inferences beyond the calculated percentages included in this narrative also limit the reader's ability to make generalizations. Despite these limitations, the keyword mnemonic strategy has practical applications for teaching a limited number of specific words and can have practical applications across educational disciplines in helping build the first language vocabularies and second language vocabularies of not only our delayed readers, but all of our students in an effort to boost their reading and comprehension skills and their vocabulary knowledge base.

Although my action research does not, cannot, and should not suggest a research-based “best practice” for others to follow, by combining quantitative research findings with practical classroom applications, I have practice-based evidence to support my instructional practice with students, parents, and administrators. Such action research forces me to question my practice in ways that promote my continued growth and that of the students for whom I am responsible.

Appendix

SAT Vocabulary Instrument: Examples from Each of the Five Sections

Section 1

1. asunder
 - a. to refrain from
 - b. to harass
 - c. to separate
 - d. to get in the way of
 - e. to rub away

Section 2

- | | |
|-------------|------------|
| 21. atrophy | a. avoid |
| 22. craven | b. shrink |
| 23. askew | c. method |
| 24. evade | d. crooked |
| 25. mode | e. fearful |

Section 3

41. After the ___ from my mother, I decided that I would never sneak out of the house again without her permission.
- a. Endure
 - b. Accolade
 - c. Dispute
 - d. Harangue

Section IV

61. a. cranny b. citadel c. bulwark d. castle

Section V

81. During World War II, ships in the Atlantic Ocean ____ missiles over the ____ constructed by German soldiers to protect against invasion.

- a. Catapulted, citadels
- b. Beleaguered, milieus
- c. Catapulted, bulwarks
- d. Bulwarked, dromedaries

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