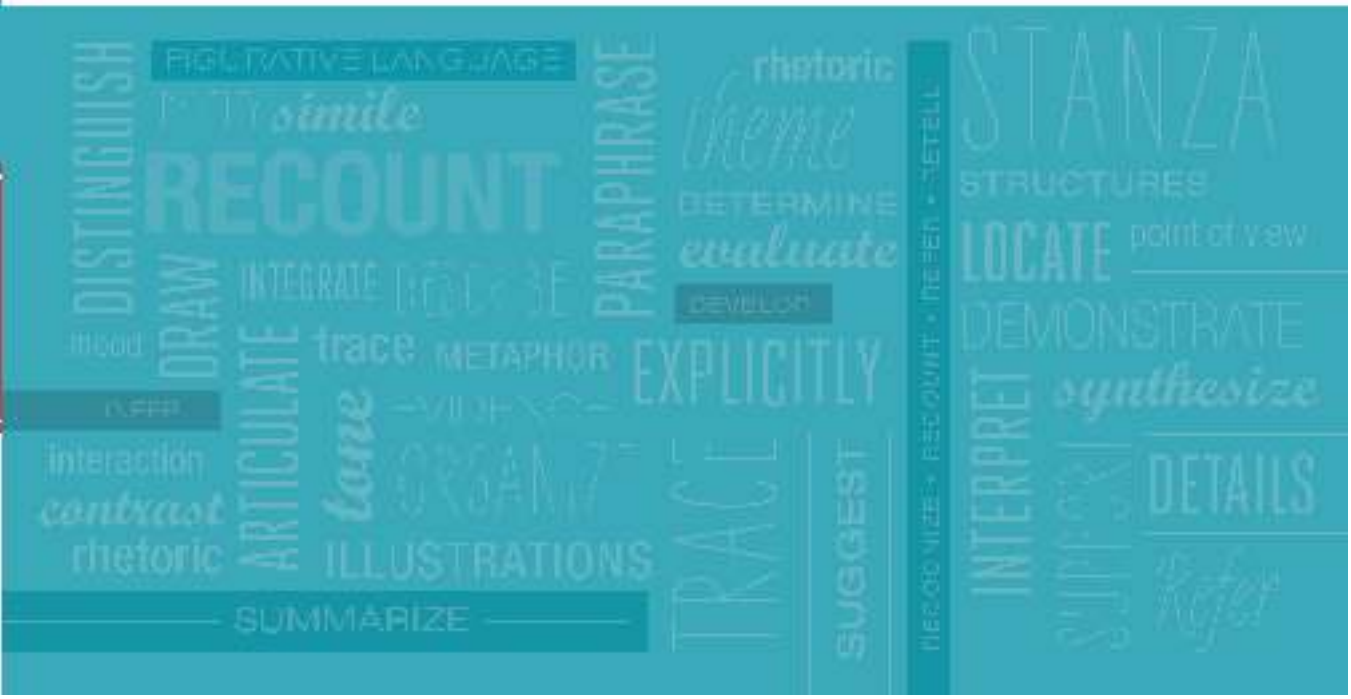
MARILEE SPRENGER

TEACHING THE CRITICAL VOCABULARY OF THE COMMON CORE

55 WORDS THAT MAKE OR BREAK STUDENT UNDERSTANDING



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Dedication

This book is dedicated to all teachers who work hard every day to help students increase their background knowledge and their success in school and life by building their vocabularies. I hope this helps. This is also for my students who needed more help than I knew how to give them. I wish I had a second chance. I am still learning.

TEACHING THE CRITICAL VOCABULARY OF THE COMMON CORE

Acknowledgments

I want to thank the teachers and students who let me "quiz" them on the critical vocabulary words in this book. They gave me the inspiration and vision to write something that would help with the Common Core State Standards. To my own students I owe a debt of gratitude, especially those who had trouble with vocabulary and made me work harder to come up with ideas that would help them.

Special thanks to Genny Ostertag, Stefani Roth, and the ASCD book acquisitions team who feel this work is important for educators to have in their hands as soon as possible. I am grateful for the confidence and encouragement. Deborah Siegel, associate editor, has been a champion in trying to see my vision and make the information in this book easy to access and use.

Of course, I must acknowledge my husband, Scott, who puts up with the late hours and the missed dinners while I am working on a project. The entire family is supportive: my two children, Josh and Marnie, are always in the back of my mind as I write for very different learners. Amy, my daughter-in-law, is a new author, and her diligence keeps me motivated. Jack, Emmie, and Maeven, my grandchildren, are inspirational as I watch their vocabularies increase each day.

Introduction

With the adoption of the Common Core State Standards (CCSS) by most states, there has been a sense of urgency for some educators and a sense of impending doom for others. As the tension grows for all, I looked for a place to start making the brain what I call "core compatible." Neuroscience research has provided us with information that has been translated into classroom practice. We now know how to help most students.

For the past several years, I have been sharing the research that suggests that standardized tests are based on the vocabulary of the standards. We discuss the 85 percent conclusion (the idea that 85 percent of test scores are based on how well students know the vocabulary of the standards) that Marzano (Tileston, 2011) and others have researched. The teachers were much like my students, nodding that they knew this information and confirming that they were teaching the vocabulary. As a result, I assumed that they were using this exciting bit of knowledge to jumpstart their students to success. But why were test scores dismal at so many schools? Just as I would believe those nods and yeses from the kids, I believed the teachers as well. And the truth is, we do teach much of the vocabulary, but we do not teach it well enough. After all, who does not ask students to analyze, compare, or summarize? As I think about my own classrooms, I realize that with some students who were less familiar with terms like these, I would break them down for them as I cruised the room to help when I saw confusion on their

faces. Instead of reiterating that we were working on compare and contrast, I would say, "Just write down what is the same and what is different." So, they knew what I wanted them to do, but the word itself, which they would run into on assessments, was often lost.

I started doing some research of my own. Whenever I was in a classroom during the past year, I asked students simple questions like, "Can you describe what is in this picture?" "Contrast those ratios." "Analyze the poem." From kindergartener Jack to 6th grader Liza, I got little response. Jack did understand *compare* when I asked, "Can you compare your lunch with Emily's?" At the next table, however, Sam could not. When I headed to the high schools, I thought it would be different. I was disappointed to discover that many of the students had difficulty with the words. Of course, those from low-income families and English language learners had the most trouble. What if some of the difficulty our schools have with raising student achievement is as simple as teaching and reinforcing these words?

I wondered about my own students. Had I prepared them for their tests? Did I teach them the right words? I thought I had. But how did I teach them? Did the learning stick? I remember the rush to get things covered. Was I really taking into consideration the memory research? *Was I teaching it quick but not making it stick?*

As we transition to the Common Core standards¸ we have the opportunity to truly prepare our students for their futures. We must do everything we can to ensure their success. This book is intended to give everyone the jumpstart they need. The words in this book are not uncommon, but for one reason or another, they have not entered most of our students' long-term memories nor have they been rehearsed to a point where they are automatically recognized, defined, and acted upon.

I call the words in this book "critical." The definitions of *critical* include indispensable, essential, urgently needed, absolutely necessary, decisive, momentous, pressing, serious, vital, urgent, all-important, pivotal, high-priority, now or never. **The definitions of the word *critical* tell us the story.**

As we head into the regular use of the Common Core standards, it is *essential* that our students master these words. It will be *absolutely necessary* for them to automatically know the definitions without using precious

working memory. If they must search their brains to understand what the questions on the assessment are asking of them, they are wasting precious time and brain space needed to analyze their readings and answer the questions. These words should be the first group of Tier 2 words to tackle. *Critical* also is defined as "now or never." The time is now to transition to the CCSS. The students who are comfortable with these words will be the most successful in mastering the standards. These words will be indispensable on assessments and in life.

Teaching these words is urgent in order to assist students in understanding what is expected of them as they tackle complex texts, learn to read more closely, add to their vocabularies, improve speaking and listening skills, and become well-rounded learners and members of society.

Chapter 1 addresses research on vocabulary. It is necessary to know how students acquire words and their meanings. Research offers steps that can be followed for most vocabulary words. The critical words will require more from teachers and students, but this is valuable background knowledge.

Chapter 2 explains how memory works. The brain has memory systems and pathways that work in different ways. The procedural nonmotor system is the memory system that works for placing these words and definitions in the brain so they are instantly accessible.

Chapter 3 describes the critical verbs. The association of these verbs with the CCSS helps motivate us to teach these important words. Various strategies such as jingles, 2-D and 3-D graphic organizers, computer games, and movement activities along with the research on these and other strategies are presented. Then the fun begins with pages devoted to each verb along with suggested activities to help all students learn and remember them.

The critical nouns are introduced in Chapter 4. Following some general information for remembering the types of ideas and concepts that words represent, the nouns themselves will be introduced one by one with activities to help you create lessons for them.

Chapter 5 provides a few more words that are important for some grade levels but are not nouns or verbs.

Chapter 6 includes information about the Common Core vocabulary standards.

Chapter 7 offers basic ideas on keeping these words alive in the minds of our students. Words of the week, usage across content areas, and using these words on classroom assessments and in classroom conversations are a few of the fundamental strategies mentioned.

The appendix provides templates for many of the strategies used throughout the book.

Once these words are embedded in our students' long-term memories, they will become part of our common conversations as we teach to the CCSS.

How to Use This Book

If you are like me, you may need to read this book from beginning to end. I suggest you read the first three chapters and dive into those verbs! Once you have those critical words going, read Chapter 4 and decide if you need to teach all of the critical nouns or just a few.

There are some strategies repeated and others only described once. They are all useful strategies, and don't think that the ones that are in a particular word's section are all you should use for that word. I tried to offer as many different strategies as I could, but you have your own toolbox to use.

If you consider these words valuable for your students and I have offered you some ideas on how to teach them, then I will have accomplished my goal.

CHAPTER 1

What Does the Research Say About Vocabulary?

One of the key indicators of students' success in school, on standardized tests, and indeed, in life, is their vocabulary. The reason for this is simply that the knowledge anyone has about a topic is based on the vocabulary of that information (Marzano & Pickering, 2005). For instance, as you read the following sentence, see if you are able to determine what is being discussed.

> *A duct-less split can produce the exact amount of energy needed to temper an envelope.*

When I first read this sentence, my mind started to try to make connections to envelopes and wondered if tempering had something to do with getting or keeping the glue on the flap. If you are an engineer, you probably know that the sentence above refers to equipment and its capability of cooling a room. As with any topic, the more you know about heating and cooling, the easier it is to learn and understand information about it.

There are a variety of factors that affect student achievement, including the effectiveness of the teacher, the student's own personal interest in the content matter, and the amount of information students already possess about the content. "Prior knowledge" is a term with which most educators

are familiar. In neuroscience terms, we are talking about long-term memory. And, yes, prior knowledge, also known as background knowledge, consists of networks in the brain that have been placed in permanent memory. In this chapter we will consider how students obtain knowledge about subject matter and how vocabulary supports this knowledge.

The Background on Background Knowledge

According to Marzano (2004), background knowledge is acquired through the interaction of two factors: the ability of the student to process and store information (which will be covered in Chapter 2), and the regularity with which a student has academically oriented experiences. Professional educators know that the amount of background knowledge our students have may rely a great deal on their cultural differences and their economic status (Tileston & Darling, 2008).

Not only does background knowledge grow in the brains of our students through their experiences, but the vocabulary words that are stored as a result of such experiences provide avenues to comprehend the curriculum from the text, as well as lecture and discussion. We can look at the work of Piaget (1970), who concluded that we organize information in our brains in the form of a schema, a representation of concepts, ideas, and actions that are related.

Schemata (the plural of *schema*) are formed in our brains through repeated and varied experiences related to a topic. As a neuroeducator, one who teaches students and teachers based on current brain research, I like to refer to schemata as those networks in the brain that we form, store, re-form, and restore through our interactions in the world through both experience and environment. It is the brain's ability to change known as neuroplasticity that allows us to learn and form lasting memories. (Doidge, 2007). Yet, as new evidence presents itself, the brain can change to accommodate the new information.

Often long-term memory is compared to files in our brains. Just as you store files on your computer or tablet, the brain stores information in ways that allow it to retrieve concepts, ideas, and actions in an orderly and expeditious manner. Consider, if you will, the file you have stored for "school."

As an educator, you may have stored in that file what you liked or loved about school that brought you to the classroom and perhaps beyond. In that file you may also have memories of your own school days, beginning with preschool and going through the university degrees you may have. Certain teachers who are role models for you are stored in this file, as are teachers you would not want to emulate. If you have been in education for a while, there are many "buzzwords" that have been used throughout the years that were considered best practices in teaching. Today you have probably added terms like *differentiation, Response-to-Intervention,* and *Common Core State Standards.* All of this, and much more, refers to your background knowledge of "school."

All of our students have a school file (or schema) in their brains as well. Their files are likely very unique to their experiences with schools and teachers, their cultures, their parents views of education, and their personal success in school.

It is no easy task to build background knowledge in students who enter our classrooms with few academic experiences from other classrooms or from real-world involvement. Background knowledge is a reflection of who they are; it is the lens through which they see the world. Those students from low-income families see school in a different light. School may be a place to be safe when home is not. School may be inconsequential to those who believe their "street smarts" will get them farther in life than school smarts. School may feel dangerous to some students whose parents identify school as a place where they felt stupid or unappreciated. Many students from impoverished backgrounds enter school with little knowledge of a world outside the streets where they live. If their poverty was pervasive throughout their short lives, factors such as lack of nutrition or exposure to toxins may have stunted the growth of their brains, which affects their cognitive abilities (Perry, 2001).

According to educational research by Hart and Risley (1995), children enter school with "meaningful differences." The differences that did not appear to be meaningful were things like race, ethnicity, birth order, or gender. What made a big difference among students was economics. In their book, *Meaningful Differences in the Everyday Experiences of Young American*

Children (1995), Hart and Risley state, "by age 3 the children in professional families would have heard more than 30 million words, the children in working class families 20 million, and the children in welfare families 10 million" (p. 132). Interestingly, although the number of words spoken was different, the topics and the style of speech were similar. The parents who spoke to their children more began to ask questions, vary their vocabulary, and in general offered the kids a rich language experience. In addition to counting the number of words that were spoken to the children, Hart and Risley also examined the types of reinforcement the children received. The number of affirmative statements as opposed to prohibitory statements was tallied for each socioeconomic group. The professional parents offered affirmative feedback much more often (every other minute) than the other groups. The welfare parents gave their children more than twice as many prohibitions as the professional parents. Some children in professional families heard 450 different words and 210 questions in the three hours the parent spoke most. Another child from a low-income family heard fewer than 200 different words and 38 questions in that same amount of time. The results of the study lead all to believe that the single-most important component of child care is the amount of talking occurring between child and caregiver.

Consider these facts:

- Vocabulary is a strong indicator of student success (Baker, Simmons, & Kame'enui, 1997).
- The number of words students learn varies greatly:

  2 vs. 8 words per **day**
  750 vs. 3,000 per **year**

- Printed school English, as represented by materials in grades 3 to 9, contains 88,533 distinct word families (Nagy & Anderson, 1984).
- 88,533 word families result in total volumes of nearly 500,000 graphically distinct word types, including proper names. Roughly half of 500,000 words occur once or less in a billion words of text (Nagy & Anderson, 1984).

- In grades 3 through 12, an average student is likely to learn approximately 3,000 new vocabulary words each year, if he or she reads between 500,000 and a million running words of text a school year (Nagy & Anderson, 1984).
- Between grades 1 and 3, it is expected that economically disadvantaged students' vocabularies increase by about 3,000 words per year, while middle-class students' vocabularies increase by about 5,000 words per year.
- Children's vocabulary size approximately doubles between grades 3 and 7.

More recent research added pertinent information to vocabulary development. Dr. Catherine Tamis-LeMonda of New York University and Dr. Marc Borstein of the National Institutes of Health approached the topic of vocabulary development in a different way. They compared maternal responsiveness in children who all came from professional families, with interesting results. (Remember that the children from professional families heard 30 million words by age 3.) The study found that the average child spoke his or her first words by 13 months and by 18 months had a vocabulary of about 50 words. Mothers who were considered high responders—that is, they responded to their child's speech quickly and often—had children who were clearly 6 months ahead of the children whose mothers were low responders. These toddlers spoke their first words at 10 months and had high vocabularies and the ability to speak in short sentences by 14 months (Bronson & Merryman, 2009).

Poverty, the Brain, and Vocabulary

Students from low-income families are part of the at-risk population who have heard fewer words and may have brains that are not as cognitively efficient for some of the work ahead of them in school and in life. Research supports the need for these students to have some extra resources. The remarkable ability of the brain to change has been seen in students with many

different kinds of deficits. Poverty can cause physical differences in the brain as well as behavioral differences (Jensen, 2009). According to Harris (2006), three areas drive school behavior:

1. **A desire for reliable relationships.** Much research looks at the teacher-student relationship as a driving force for motivation, socialization, and academic performance.
2. **A desire for social acceptance by peers.** In order for students to seek academic achievement, it must be socially acceptable to achieve it. Your school must create a culture that supports and encourages good academic behavior.
3. **A desire for social status.** Students want to feel special. The emotional brain contains an affective filter that will allow information to go to higher levels of thinking under the right conditions. Negative feelings, lack of social status, and low peer acceptance will keep the brain focused on these and prevent cognitive function.

How Are the Brains of Poor Kids Different?

Several areas of the brain are different in low-income and middle-income students. Using the work of Farah, Noble, and Hurt (2005), we can examine five systems that are responsible for overall school functioning:

- The executive system, which engages the prefrontal cortex of the brain. This structure is crucial to working memory, future planning, delaying gratification, and decision making.
- The language system, which involves the temporal and frontal lobes of the left hemisphere. This system is our reading system and contains the structures that allow students to decode, pronounce, and comprehend.
- The memory system, which allows students to process semantic learning (text, lecture, pictures, etc.) and then store it. This system is responsible for one-trial learning and the ability to retain a representation of a stimulus after a single exposure to it. Our emotional center and our memory center are next to each other, which explains why emotions influence our memories.

- The cognitive system, which includes our visual spatial abilities and our problem-solving capabilities of the parietal lobe. This system is vital to sequencing, organizing, and visualizing.
- The visual cognitive system, which allows students to recognize patterns, remember images, and abstract information.

The results of testing these systems in several studies remained fairly constant. The lower the socioeconomic status, the more difficulty the students had performing tasks involving these systems. Most noticeable were the memory system issues and the language system issues. The group tested middle school students and primary students with the same results. These issues affect not only school performance, but life performance as well.

As researchers continue to study the effects of poverty on academic performance, they know there are a myriad of possible causes of these issues. It is not the purpose of this book to delve into those causes. I will suggest that most research examines prenatal toxins, maternal stress, lack of proper nutrition, living in toxic areas, maternal education, and the amount of language and literacy in the home.

Improving the Systems

Because the brain is malleable and these systems can change, researchers have made several suggestions to improve the brain systems of low-SES children.

- Gazzaniga, Asbury, and Rich (2008) suggest the arts can improve cognitive skills, processing, attention, and sequencing.
- Pereira and colleagues (2007) suggest physical activity as an avenue to produce new brain cells, which has been associated with increasing learning and memory.
- Computer instruction in which students identify, count, and remember objects by holding them in working memory can increase working memory within a matter of weeks, according to Klingberg and colleagues (2005).
- Training in music can improve the brain's operating systems as it enhances focused attention, which will assist in memory (Jonides, 2008).

The arts, movement, computer use, and music are some of the strategies that will be helpful in teaching all of our students the vocabulary of the standards. Understanding and being aware of some of the challenges that our at-risk students face will help us to focus our vocabulary teaching in a way that will improve the minds and memories of our students.

The Three Tiers

In 1985, Beck and McKeown suggested that every literate person has a vocabulary consisting of three levels (Beck, McKeown, & Kucan, 2002). Tier 1 words consist of basic words. These words usually do not have multiple meanings and do not require explicit instruction. Sight words, nouns, verbs, adjectives, and early reading words occur at this level. Examples of Tier 1 words are *book, girl, sad, clock, baby, dog,* and *orange*. There are about 8,000 word families in English included in Tier 1. Tier 2 contains high-frequency words that occur across a variety of domains. These words play a large role in the vocabulary of mature language users. As a result, Tier 2 words may have a large impact in the everyday functioning of language. Because of their lack of redundancy in oral language, Tier 2 words present challenges to students who primarily meet them in print. Tier 2 words consist of such words as *coincidence, masterpiece, absurd, industrious,* and *benevolent.* Because Tier 2 words play an important role in direct instruction, there are certain characteristics that these words have:

- Usually have multiple meanings
- Used in a variety of subject areas
- Necessary for reading comprehension
- Characteristic of a mature language user
- Descriptive words that add detail

Tier 3 consists of words whose practical use and frequency is low. These words are domain-specific and are used for brief periods of time when we are studying particular content. Tier 3 words are central to building knowledge and conceptual understanding within the various academic domains

and should be integral to instruction of content. Medical, legal, biology and mathematics terms are all examples of these words. Although useful while covering specific topics, these are too specific to be included in the most useful tier for vocabulary building, Tier 2.

The CCSS stress that learning and using vocabulary is an essential component to college and career readiness, and references to it appear throughout the grade-level standards.

How do students add words to their mental lexicon? It begins with listening to the conversations in the early environment. Then vocabulary would be enhanced through listening to adults read aloud. Because stories contain vocabulary words not used in daily conversation, this is an excellent way to expand vocabulary. Students who come to our schools from a literacy-rich home are clearly in a better position to meet the CCSS. But the neuroplasticity of the brain teaches us that all students can learn, enhance their vocabulary, and change their brains (Sprenger, 2005).

The "How" of Teaching Vocabulary

In *Building Academic Vocabulary: Teacher's Manual* by Marzano and Pickering (2005), the following steps are recommended:

1. Begin with a story or explanation of the term. Modeling how you use the word in your life or in conversation may be helpful to students.
2. Have students put information into their own words. This process, which I call "recoding," is necessary to make sure students understand the word. This is a vital step in the memory process. Skipping this step can be disastrous as students may have a misconception that will be placed in long-term memory through incorrect rehearsals (Sprenger, 2005).
3. Ask students to draw a picture or a graphic representation of the word. According to Ruby Payne (2009), if students cannot draw it, they really don't know it.
4. Provide several engagements with the term and have students write them in a notebook. Research suggests that writing is good for the