TEACHING THE CRITICAL VOCABULARY OF THE COMMON CORE

55 WORDS THAT MAKE OR BREAK STUDENT UNDERSTANDING
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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.
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 poverty or 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 and 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 Common Core State Standards. 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 urgently needed 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 CCSS and the association of these verbs with them help 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 these 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 Common Core State Standards.

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!
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 they 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 experiences that are academically oriented. Professional educators know that the amount of background knowledge our students possess 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 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 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 similar 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 well as teachers that 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 poverty 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 poor 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. Hart and Risley state in their book, *Meaningful Differences in the Everyday Experiences*
of Young American Children (1995), “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 in that same amount of time heard fewer than 200 different words and 38 questions. 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, and 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 poverty 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 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.
What Does the Research Say About Vocabulary?

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 as well as 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).
Music, movement, the arts, and computer use 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 standards that these words follow:

- 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 Common Core State Standards 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 Common Core State Standards. 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. Putting information into their own words is an important next step. 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. According to Ruby Payne (2009), if students cannot draw it, they really don’t know it. Ask students to draw a picture or some graphic representation of the word.

4. Step 4 suggests that you provide several engagements with the term and have students write them in a notebook. Research suggests that
writing is good for the brain and memory, so using those notebooks or some other platform for writing is important (Snowdon, 2001).

5. Informal rehearsals are just as important as formal ones. Engage students casually in conversation using the term. Put them in pairs and let them discuss their definitions as a good way to see if all students are storing the same information.

6. Play games with the words. Games are a brain-compatible strategy for reinforcing learning. Actively processing vocabulary words in multiple ways allows the brain to store information in multiple memory systems, thus making access to that information easier with multiple triggers or cues (Sprenger, 2010).

Why Worry About the Critical Words?

According to the neuroscientific research, my suggestion that it is “now or never” doesn’t make much sense. But as a classroom teacher, I can tell you—and indeed, you can tell me—how important it is to get kids up to speed as quickly and efficiently as possible. Sure, anyone can learn the fifty-five or so words I consider critical to test taking, academics, and to life. But we should teach these words sooner rather than later to help our students increase test scores, build confidence, and put the words into daily use. Vocabulary has long been ignored or thought a burden in our classrooms. It is time to give it the time it deserves. Teaching vocabulary in fun and interesting ways will make learning new words something for all of us to look forward to.
CHAPTER 2

Processing and Storing Vocabulary

How often do you ask questions like this? “Does that make sense?” “Everybody got that?” “Are there any questions?” “Okay, did you write down that definition?” Too often, we accept nods and smiles for understanding. This is often why by the time students leave our rooms—that is, walk out the door—they have forgotten what we think we have just taught them.

We can look at the gradual release of responsibility (Pearson & Gallagher, 1983) model when we talk about processing vocabulary. The model is a four-part approach that begins with dependence and leads to independence in any area you are teaching. It always begins with the teacher. The GRR model, as it is often called, begins with teacher demonstration or modeling. In this phase, the control is in the hands of the teacher. The next step is guided by the teacher with student help or interaction. In step 3, the teacher offers some support, but most of the responsibility is on the student. Finally, the student is completely independent. Although the model looks like it is a simple four-step process, more time may be spent on different levels depending on the needs of the students. (See Figure 2.1.)

When we introduce new words, step 1 may take many modeling opportunities. Step 2 may consist of more interaction between teacher and
students. Step 3 may involve creating and re-creating definitions, discussing why the definition works, and writing many sentences to help the word truly make sense to the students. Finally, step 4 shows only one example of the independent work. Learning the critical words will take many elaborate engagements in order to place the word in the memory system required for this type of long-term memory.

Many of these steps provide opportunities for formative assessment. Checking for understanding of the words and how they work in context is necessary to keep misinformation from becoming memories that have to be changed.

The goal of this book is to show you how to get these critical words, and other words as well, into long-term memory. It is helpful if you understand which memory system we will be using to do this. So this chapter will very briefly give you some information on the brain and memory.

## Two Kinds of Memory

Memory researchers like Squire and Kandel (2000) and Schacter (2001) teach us that memory is divided into declarative and nondeclarative memory. Some call these explicit memory and implicit memory.

Explicit or declarative memory is the kind of memory that you can and do talk about. It is your autobiographical memory, so this system is used

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### FIGURE 2.1
Gradual Release of Responsibility for Vocabulary

<table>
<thead>
<tr>
<th>I DO IT</th>
<th>Discussing the vocabulary word; reading it in context.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WE DO IT TOGETHER</td>
<td>Looking up the dictionary definition and choosing a definition that sounds right for the context.</td>
</tr>
<tr>
<td>YOU DO IT TOGETHER</td>
<td>Students work in pairs or groups to come up with a definition together in their words.</td>
</tr>
<tr>
<td>YOU DO IT ALONE</td>
<td>Creating a mind map using the word as the focus.</td>
</tr>
</tbody>
</table>
when you give information about your life. It includes the people you know, the places you have been, and the experiences you have had.

Declarative memory can be divided into the episodic system and the semantic system. Episodic memory consists of those episodes in your life and can be very powerful in school. Students often remember what they learn after they first remember or visualize where they have learned it. Semantic memory consists of the memories that are made through the use of words. Lectures, textbooks, pictures that are discussed, video, and other media are included in this type of memory. As we get into learning the critical words, you will see how declarative memory plays a part in that process.

Nondeclarative is the type of memory I want you to understand as a valuable tool for teaching the critical words. Think of how you have taught reading, especially decoding and fluency, or how you teach multiplication tables. Although today’s students can look up just about any information they need on the Internet, it is necessary for their brains to memorize some basics in order to understand larger ideas and concepts.

Nondeclarative memory is generally divided into different categories: procedural memory that is motor based and procedural memory that is non-motor. Riding a bike is a procedural motor skill; decoding words is a non-motor procedural skill.

Some version of the paragraph above has probably shown up in your email. Most of us read the paragraph with little effort. That is because we have thousands of words stored in our mental dictionary, the small brain structure in the left hemisphere called Wernicke’s area. This lexicon has been built over the years and has the ability to store an unlimited amount of words.
Those of us who came from a strong literacy background from childhood have a larger stored vocabulary. Students who come from a background of little literacy and limited dialogue have a smaller lexicon. Therefore, the preceding paragraph of this chapter may be quite difficult for them. A dyslexic student may also have a limited mental dictionary and could struggle with words like research.

When students learn sight words and high-frequency words, they are committing the patterns in these words to memory. Every time we see the letters t-h-e we automatically know we are reading “the.” Automaticity is the ability to do things without having to think about them at a conscious level. When we do something automatically, our mind isn’t occupied with the small details of the task. This takes place because of our procedural memory system. Take a moment and think of the things you do at an automatic level. Driving a car comes to mind immediately. In fact, driving at that mindless level is a little scary. Have you ever gotten in your car on Saturday to go the grocery or the mall and found yourself driving the familiar path to school? Or arriving at a destination wondering how you got there or if you ran a red light? Fortunately the patterns that are stored in this procedural manner send an alarm whenever something seems amiss. You respond quickly if you look in your rear view mirror and see the red revolving light on the top of a police car.

Motor skills, such as riding a bike, are processed in several areas of the brain, including the prefrontal cortex and the cerebellum. In nonmotor procedural learning, such as decoding words, the brain area that appears to be most heavily involved is the visual cortex. As students rehearse their reading skills like committing the sight words to memory, those words are stored in many different ways, and initially they are stored pictorially. As the brain takes a snapshot of the words, it remembers the distinctions of the shapes and the lines, and a picture develops. With repeated practice, a long-term memory is formed. Remember that these changes do not involve understanding word meanings, only the ability to recognize the patterns more quickly. When students work on the meanings of words, more brain areas participate, including Wernicke’s area.
The beauty of the automatic system in our brains is its ability to free up working memory. Working memory is the temporary system we use to get things done. You are using working memory as you read the words on this page. Your brain takes the information from the page, adds any prior knowledge you have of the topic, and gives you the space to comprehend what you are reading. Becoming a fluent reader necessitates the ability to use the automatic system. Riding a bike, brushing your teeth, adding low numbers, multiplying, and singing songs fall into the category of automatic memory.

All of this information leads us to the fact that many of our students, especially those from less advantaged backgrounds, those who are ELL students, and some students with learning disabilities, have a more limited vocabulary and have not developed their automatic systems to the level necessary for our purposes.

The Bottom Line

To be successful with the Common Core State Standards, students need a smooth running automatic memory system to process and store the academic vocabulary of the standards.

Michael sits quietly at his seat, staring at the paper before him. His pencil is clenched in his hand. His eyes dart across the words on the page. He doesn’t understand what is expected of him. As a result, he is embarrassed and a little panicky. This is a state test, and Michael knows he is not allowed to speak to anyone nearby. His feelings are troubling and he continues to look down at his paper and then down at his lap. As the minutes tick by on the clock, he feels more and more hopeless.

Mrs. Murphy observes the students as she sits at her desk. Occasionally, she cruises the room very quietly as to not disturb the students who appear to be working diligently. She sees Michael put his No. 2 pencil down. This does not bode well for Michael’s test score. When time is up, Mrs. Murphy asks all students to put their pencils down and collects the test booklets and answer sheets in the appropriate manner.
At this point Mrs. Murphy approaches Michael. “It looked like you were having some problems with the test, Michael. Did you have trouble reading the text selections?” Still looking down, “No, ma’am.” “Then why weren’t you answering the questions?” “I didn’t know what they wanted me to say.” “So, you understood the readings, but you didn’t understand the question?” “No, ma’am. I didn’t know what that word meant, analyze.” “But, Michael, we have gone over the definition of that word. You have done some activities in which you had to analyze how two articles addressed the same idea or theme. Do you remember that?” “No, ma’am.” Michael continues to look down, now at the floor. Mrs. Murphy looks concerned and gets on with the class.

I want to point out two things in this scenario. First, according to Michael, he read and understood the texts he had to read to answer the questions. If that is true, this is probably a great accomplishment for him to tackle the complexity of the readings. It may very well be that he understood the readings but could not answer the questions because those contained vocabulary that he had not mastered.

The way memory works in the situation follows:

1. The student reads the selections. While reading, his working memory, the space in his brain behind his forehead, holds on to the new information, while drawing on long-term memories previously stored to help him comprehend what he reads.
2. When he reads the questions that relate to the selections he has just read, he must be able to understand the vocabulary of the question so well that he doesn’t utilize any of the working memory space that is now designated as a holding port for the comprehension of the selections.
3. The student should automatically know and comprehend what the question is asking without skipping a beat. If the question is not understood, a few different situations can follow. First, he might
ponder the wording of the question. In the scenario, the word was *analyze*. He could sit there and say to himself, “Analyze. What is that? I know I have heard it before. But how do I analyze something?” Now, he either figures out what it means and returns to the test, or he does not and the answer is blank. If the former occurs—that is, how to analyze suddenly comes to mind—he now must go back and figure out again what he is analyzing. You see, he pushed some of that information out of his working memory as he tried to figure out the definition of the word. And time keeps on ticking. . . .

The second observation of the scenario with Michael is the fact that he is looking down. If you are familiar with eye-accessing cues as described by Ruby Payne (2009), you know that when we look down we are accessing our feelings rather than our memories. As long as Michael is looking down, feeling badly that he doesn’t understand what he is to do, and perhaps feeling like he is “dumb,” he cannot access the definition of the word *analyze*. He must look up to get the visualizations he may have stored from learning the word, so the first thing to do with a Michael situation in your classroom is to walk over to him and ask him a question that forces him to look up at you. That could trigger a memory.

**If They Process It, It Will Be Stored**

Memory is processed in a way that on paper looks very linear. The brain is, however, a parallel processor, and the brain can store information in different systems and structures simultaneously.

Typically, a long-term memory is formed by information passing through several systems. First, information enters the brain through the senses (visual, auditory, kinesthetic, olfactory, or gustatory). This information first must be noticed by the sensory memory system. If that occurs, the information is now in immediate or conscious memory, where it will last up to 30 seconds. If the information is acted upon in any way, it will be placed in working memory. From working memory, which can last for hours, with enough engagements,
the material may become long-term memories. It is in those working memory actions that networks in the brain are created and reinforced.

For students like Michael, extra processing of academic vocabulary words is necessary. The fact may be that many of our students have heard these important terms, have done assignments using these important terms, but for one reason or another, there wasn’t enough processing time for their particular memory systems to store the words in long-term nonmotor procedural memory.

Here is the plan: process the critical words in enough different ways to get them stored in the brain in multiple places. The result of this is easier access to the definition. Continue to rehearse the processing in enough formats over time, and the words become as automatic as who, what, why, how, and where!

As Eric Jensen says (in a 2012 webinar from Scientific Learning, “Teaching with the Brain in Mind”), “Don’t teach it ’til they get it right—teach it until they can’t get it wrong!”
You’ve looked through the CCSS and you see words that I have not included in the critical words, and you want to know why? I did make some choices as the word list got longer. For instance, words that begin in the lower grades and make their way through many standards and to the higher grades, I felt needed to be included. A few words that are certainly important—and perhaps critical—to your content and grade level also deserve a spot in this book. In addition, there are some adjectives and adverbs that our students need to know. So, this is the chapter for a potpourri of words!

### Classify/Categorize

**Definition of Classify:** arrange in classes according to shared qualities

**Synonyms:** order, organize, sort

**Definition of Categorize:** putting classified items into smaller groups

**Synonyms:** catalog, label, group
Classify/Categorize in the Common Core

Writing Standard Grade 4.8. Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

In the Common Core Standards for Math, classify and categorize are found in kindergarten under Measurement and Data and continue throughout the grade levels in areas such as algebra and geometry as well as in functions in high school.

Classify and Categorize in Bloom

Classify and categorize fall under the category of Analysis in Bloom’s taxonomy: examining and breaking down information into its parts. Classify is also considered part of comprehension: demonstrating understanding of the stated meaning of facts and ideas.

The Category for Classify and Categorize

Identifying similarities and differences is a cognitive function that is fundamental to the brain. The brain likes to sort and organize learned information so it can connect it to incoming data. Our students learn by identifying patterns in their world and seek those same patterns to make sense of what is going on around them.

Explicitly teaching strategies for identifying similarities and differences is helpful for students. Not only do they need to have organizational patterns pointed out, they also need to be asked to construct their own strategies.

Students start out learning about patterns through sorting. They sort items by colors, size, use, and other key identifying characteristics. They begin to organize their brains with these broad groupings. Eventually the sorting activities are given names that differentiate them. Students begin to classify items and then categorize them.

Classifying and Comprehension

According to Silver, Dewing, and Perini (2012), inductive learning can begin with classifying. When students have difficult text to read, have them follow this process:
1. Make a list of the difficult and important words from the text.
2. Look up words whose definitions they do not know.
3. Work with partners or small groups of students to categorize the words.
4. Create word groups using all of the words.
5. Make predictions about what they think the text is about.
6. Discuss predictions with other small groups or as a whole class.
7. Read the text to see if predictions are accurate.
8. Show evidence supporting the predictions.

Classifying and Categorizing are both part of the research-based strategy Identifying Similarities and Differences (Marzano et al., 2001).

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**Explicitly**

**Definition:** fully and clearly expressed

**Synonyms:** precisely, clearly

**Antonyms:** implicitly

**Jingle:** Write explicitly—be very clear.
To the rules you will adhere!

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**Explicitly in the Common Core**

The adverb *explicitly* is found throughout the CCSS.

**Anchor Standard 1 for Reading**

Read closely to determine what the text says *explicitly* and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
Carried through the Reading Standards:

RL. 3.1 Ask and answer questions to demonstrate understanding of a text, referring *explicitly* to the text as the basis for the answers.

RL. 4.1. Refer to details and examples in a text when explaining what the text says *explicitly* and when drawing inferences from the text.

RL. 5.1. Quote accurately from a text when explaining what the text says *explicitly* and when drawing inferences from the text.

One example from Appendix B:

Students explain the selfish behavior by Mary and make inferences regarding the impact of the cholera outbreak in Frances Hodgson Burnett’s *The Secret Garden* by *explicitly* referring to details and examples from the text. [RL.4.1]

You can perform a search through the CCSS and see how often *explicitly* is used in the standards that pertain to you. You will find this word throughout.

I chuckled as I did a search on the Internet about how to teach the word *explicitly* because the hits that came up were all about teaching vocabulary *explicitly*!

Here is my lesson from my classroom:

Me: Today I want everyone to be explicit when they speak.

Student: Huh? What? What does that mean?

Me: I want you to give me clear information. When we discuss a chapter in history or science or literature, I want you to be explicit.

Student: I still don’t get it!

Me: I want you to speak exactly.

Student: You mean, you want us to speak. Exactly, right?

Me: (sigh) Let me write this word on the board for you. Write it on your whiteboards. (They have small white erase boards.) Look at the word. When you speak or write, I want you to do so in a very clear manner. I want you to be precise in what you say.
Student: What is precise?

Me: It is a synonym for explicitly! (So, now I may be losing it, but I know they need to know this word.). Let’s make a synonym wheel for explicitly.

Draw the wheel on your whiteboards as I draw it on the board up here. Explicitly goes in the center. Now let’s come up with synonyms for each spoke of the wheel.

And so it went. We used precisely, clearly, fully, exactly, accurately, and correctly. Finally, they started to get it. We continued the lesson by making sentences. It worked!

**Transforming Explicitly**

Discuss other forms of the word with the students: explicit, explicitness.

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**Recognize**

**Definition:** identify something you have seen before

**Synonyms:** know, spot

**Jingle:** Recognize is something that I know;
I can spot it and make it show!

- Recognize when irrelevant information is introduced.
- Recognize and correct inappropriate shifts in pronoun number and person.
- Recognize variations from Standard English in their own and others’ writing and speaking, and identify and use strategies to improve expression in conventional language.
- Recognize common types of text.
- Recognize idioms and other figures of speech.
Recount

Definition: give an account of an event or an experience; retell in detail and in order

Synonyms: retell, relate, report

Jingle: Recount, relate, relay,
        Explain it play by play!

Recount in the Common Core

At grade 2 the CCSS change retell to recount. They begin expecting order and key details along with some support. Use the strategies for recount that you used for retell, and I will add a few that are more challenging.

Teaching Recount

Most teachers ask for some specifics when teaching recount.

• Write in the past tense.
• Have an interesting title.
• Tell details in order.
• Have supporting paragraphs.
• Write what people said, using quotation marks.
• Use connecting words to help the reader.
• Use powerful verbs and descriptive adjectives.
• Describe the feelings of the person telling the story.
• Have a concluding paragraph.
• Share ideas and samples for each of these bullets.
Order of Introduction of the Last Words

These five words first appear in the CCSS at these levels:

- Kindergarten: classify, recognize
- 1st: recount
- 3rd: explicitly
- 4th: categorize (category in kindergarten)

Word of the Day

After having covered many of the critical words, occasionally assign each student one of the words for a day or several days. The object is to see how many times the student says the word throughout the course of the day or days. When he or she uses the word correctly, the student gets a point or a sticker or whatever you think is appropriate. You can have them make individual sheets with their names at the top. They could have 10 or so spaces for words and columns to the side for checkmarks. As they have various words, they keep track of how many times they used each one and will be able to see which words are easier to put in conversation or which words they know best.
References


Tileston (2011).

Tileston & Darling (2008).


About the Author

Marilee Sprenger is a highly regarded educator, presenter, and author who has taught students from pre-kindergarten through graduate school. She has been translating neuroscience research for over 20 years and has engaged audiences internationally. The author of eight books and numerous articles, Marilee is a popular keynote speaker who is passionate about brain-research-based teaching strategies, which include differentiated instruction and wiring the brain for success.

Marilee is a member of the American Academy of Neurology, the Learning and the Brain Society, and the Cognitive Neuroscience Society. She is an adjunct professor at Aurora University, teaching graduate courses on brain-based teaching, learning and memory, and differentiation. Teachers who have read Marilee’s work or heard her speak agree that they walk away with user-friendly information that can be applied at all levels.

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