IRA e-SSENTIALS

ENGAGING THE ADOLESCENT LEARNER

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The Power of the Word

Vocabulary Across the Disciplines

doi:10.1598/e-ssentials.8032

They say that first impressions are lasting and that the way we represent ourselves to the world can work in our favor. Whether interviewing for a job, meeting the new people who moved into your neighborhood, or striking up a conversation with an attractive stranger, we judge one another rapidly—as soon as 30 seconds after meeting. We quickly assess appearance, tone of voice, and body language to reach a rapid conclusion about the person. In addition, we listen for the vocabulary they use to determine level of education, intelligence, and trustworthiness. Much of this is based on past experiences, and we use a narrow window of time to locate a predictable pattern. Gladwell (2007) calls this rapid assessment "thin-slicing."

Our work as educators contributes collectively to the ability of our students to represent themselves positively to the world. Among the ways we do this is by fostering their ability to use the vocabulary of the situation to explain, inform, and persuade. The use of a just-right word at the just-right time can do just that. Great speeches are laden with examples. Think of President Franklin D. Roosevelt telling the nation that the bombing of Pearl Harbor was "a day that would live in infamy."

And while it's not likely that most of our students will go on to become famous orators, their command of the vocabulary can open doors for them—or quickly close them. In this column, we will discuss the importance of vocabulary across the disciplines, as well as methods for selecting and teaching this critical element of learning.

The Relationship Between Vocabulary Knowledge and Content Knowledge

The ability to understand a concept is directly tied to an understanding of the vocabulary used to represent those concepts (RAND Reading Study Group, 2002). In fact, it is useful to think of vocabulary knowledge as a proxy for content knowledge. The way one explains the structure of an atomic particle is through the accurate use of terms like *neutron, electron,* and *proton*. Likewise, we persuade others about opposition to the Vietnam War through the use of words like *protest, nonviolent resistance*, and *Summer of Love*. A troubling fact is that a significant number of students enter middle school without the necessary vocabulary to understand the content material they are reading. Some estimates run as high as 50% among sixth graders who are English learners (Lesaux & Kiefer, 2010). This presents challenges for materials use, reading and writing assignments, and even classroom discourse. It also creates further tension in attempting to increase rigor while acknowledging that "you can't learn much from books you can't read" (Allington, 2002, p. 16). Without the academic vocabulary to understand text and express ideas, a significant number of adolescents are sorely disadvantaged.

The Common Core State Standards and Vocabulary

The Common Core State Standards borrow heavily from the RAND Reading Study Group in defining the relationship between the text, the reader, the purpose, and the context for reading. Any of these factors can make a text more or less difficult for a student, and the relative level of vocabulary knowledge plays a large role in all of these. The Common Core State Standards locate vocabulary within the broader strand of Language, which also includes knowledge of conventions like grammar and punctuation, as well as functions of language such as informing, persuading, and telling stories. The standards for vocabulary acquisition and use for grades 6–12 in English language arts, history, and science are

- Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- Demonstrate understanding of word relationships and nuances in word meanings.
- Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression (Common Core State Standards Initiative, 2010, ¶ 4).

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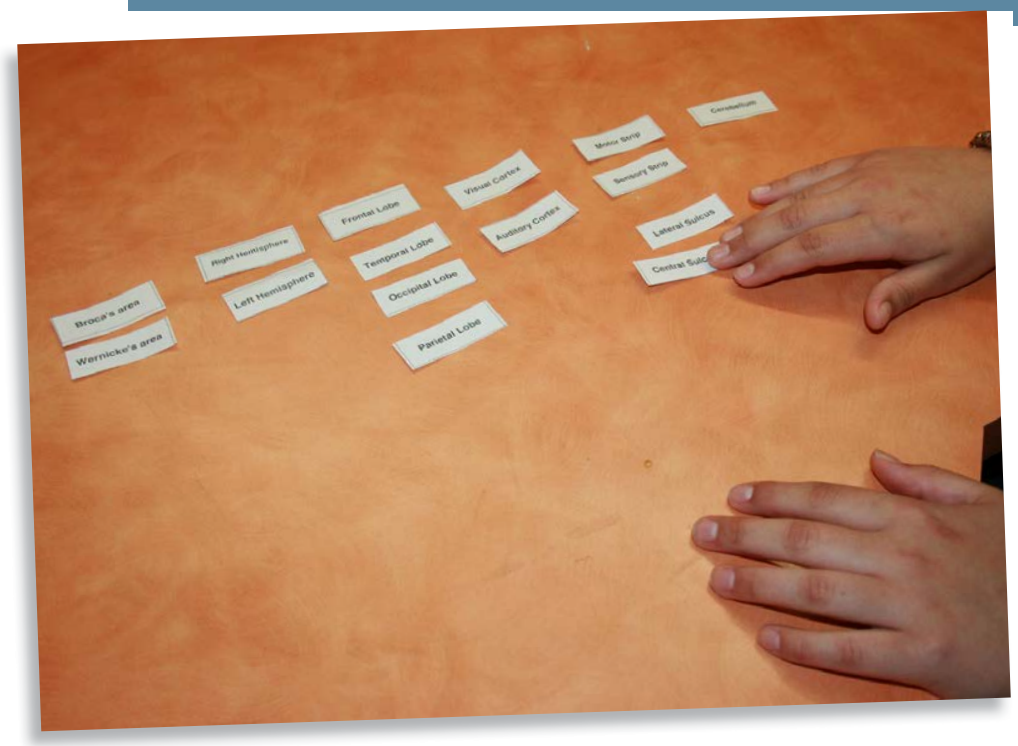
Coxhead Academic Word List

While we are opposed to the mindless teaching of disconnected words, word lists can be quite helpful when used as a guideline for determining which words should be emphasized in instruction. One of the most valuable for middle and high school students is the Academic Word List (AWL), developed by Coxhead (2000). She counted and analyzed word usage in college textbooks in 11 different disciplines, eliminating the 2000 most common words. The next 570 words and their variants comprise the AWL. The 10 sublists are arranged in descending order by frequency of use. For example, words like *issue*, *source*, and *vary* appear in Sublist 1 because they are used so often. Terms such as *assemble*, *panel*, and *persist* are in Sublist 10 because they are used less often. The AWL consists of words that are useful across disciplines, and many of these are used so often that we forget to teach them. A complete AWL list can be found at www.victoria.ac.nz/lals/resources/academicwordlist/information.aspx.



What Is Academic Vocabulary?

In their review of academic vocabulary, Baumann and Graves (2010) acknowledge that there is "a plethora of terms and meanings" (p. 4) associated with the term *academic vocabulary*. They note that these range from discussion about school-based literacies to the use of symbols to content-specific terms. While there are differences among researchers about the definition of academic vocabulary, all agree that it should be recognized as a language demand, taught purposefully and through multiple modalities and exposures (Baumann & Graves, 2010). We think of academic vocabulary and academic language as two closely related elements:

The terms used to label concepts, processes, and objects are the academic vocabulary, and the words used to make these understandable to others are collectively the academic language. Consider these sentences, with academic vocabulary in blue and academic language in red:

> Although some may confuse the terms, fractions, percentages, and decimals are ways of representing a portion of a whole. Without a means for expressing part of a whole, we could not sell a slice of pizza, compute the tax, and pay for it with cash.

> The devices used to link the terms together into a coherent set of ideas constitutes the academic language and includes rhetorical devices used to explain and clarify. Without the academic language, the vocabulary would remain a static list of words with limited use.

Types of Vocabulary

Not all vocabulary words are equally important nor are they all equally hard to learn. Some words, especially those that represent more concrete ideas, are easier to learn. For a middle school student who already knows the word *garbage* and understands that concept, adding *refuse* to her vocabulary will not be much of a challenge. Other words, such as those representing abstract ideas or ideas that are unfamiliar to the student, are harder to learn. For a high school student unfamiliar with the idea of cellular structure, the word *membrane* may be very difficult to understand, not to mention *chloroplasts*, *nucleolus*, *mitochondria*, *ribosomes*, and *vacuoles*. In some cases, the words students need to learn have one fairly consistent meaning. In other cases, the words have different meanings in different contexts. For example, the word *vessel*

doi:10.1598/e-ssentials.8032

can mean different things in science and social studies, whereas the word *chromosome* means pretty much the same thing all of the time. There are different types of vocabulary, and these types can be identified and named.

There are a number of different naming systems used with vocabulary, but two of them are probably the most common. In one of the systems, words are organized by level or tier (Beck, McKeown, & Kucan, 2002). Tier 1 words are those that are fairly common and easy to learn. These are the basic words that rarely require instructional attention in school, yet are highly frequent. Tier 1 words include high-frequency words and sight-recognition words, such as *fun*, *pleasant*, *worry*, and *when*. Tier 2 includes words used by more mature readers and writers. These words are found across diverse knowledge domains and may have different meanings in different content areas. Tier 2 includes such words as *coincidence*, *simplify*, and *tissue*. Tier 3 contains words that have one concrete meaning, typically in one content area or domain of knowledge. These are less frequently used and include words such as *isotope*, *rhombus*, and *concerto*.

Given the attention to Response to Intervention (RTI), which contains three tiers, we do not use the word *tier* any longer to discuss types of vocabulary. Instead, we have adopted the terminology used by Vacca and Vacca (2008): *general*, *specialized*, and *technical*. This classification system allows teachers to determine which words are worthy of being taught.

General vocabulary. This category includes words that are widely used, highly frequent, and relatively easy to learn. Like the Tier 1 category discussed above, general words comprise the bulk of students' speaking vocabulary. Unfortunately, in many classrooms instructional time is devoted to these words yet they are rarely worth instructional time. We recommend decreased instructional attention to these words for most secondary students.

Specialized vocabulary. This category focuses specifically on words that change their meaning in different contexts or content areas. For example, the word *expression* means one thing in general use yet something specific in mathematics. These words deserve specific attention from content area teachers as students are likely to be confused by these words. Unfortunately, these words rarely receive the instructional attention they deserve. We recommend increased instructional attention to these words.

Technical vocabulary. This category focuses on words that are discipline specific. They are generally considered difficult words and occur much more rarely than general or specialized words. These words receive instructional attention, and they deserve that attention. We recommend maintaining instructional attention to these words.

The following passage taken from a science textbook illustrates the types of words described above. The yellow highlighted words are those we consider general, the green highlighted words are those we consider specialized, and the blue highlighted words are those we consider technical.

> What is a rock?
>
> Sometimes you can tell how an object was made by simply looking at the finished product. If someone serves you eggs for breakfast, you can tell whether they were fried or scrambled. In much the same way, a geologist can tell how a rock was formed just by looking at it. The two rocks in Figure 9 mostly contain quartz, feldspar, and biotite mica. But the rocks look different because they formed in different ways.
>
> A rock is a naturally occurring solid mixture composed of minerals, smaller rock fragments, organic matter, or glass. The individual particles in rocks are called grains. Both rocks shown in Figure 9 are made of mineral grains. The grains

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give clues to understanding how the rocks formed. (McGraw-Hill, 2012, p. 55)

This passage also has other demands as well, including the academic language used (e.g.,"in much the same way" and "give clues to understanding") as well as comparative concepts such as *individual, mostly, different,* and *both*.

What Does It Mean to "Know" a Word?

Weekly vocabulary tests to the contrary, "knowing" the meaning of a word isn't a dichotomous condition where you know it or you don't; there are degrees of knowing. There are varying levels of word knowledge that include recognizing it when used by another, recalling a definition, using it in context, and associating it with other words that are similar or opposite in meaning. Dale, O'Rourke, and Bamman (1971) described a continuum of word knowledge:

1. *No recognition*: The word is unknown.
2. *Generally familiar*: The learner has seen or heard the word before but does not know the meaning.
3. *Context recognition*: The learner knows the meaning because of the context.
4. *Active usage*: The learner uses the word in spoken and/or written language.

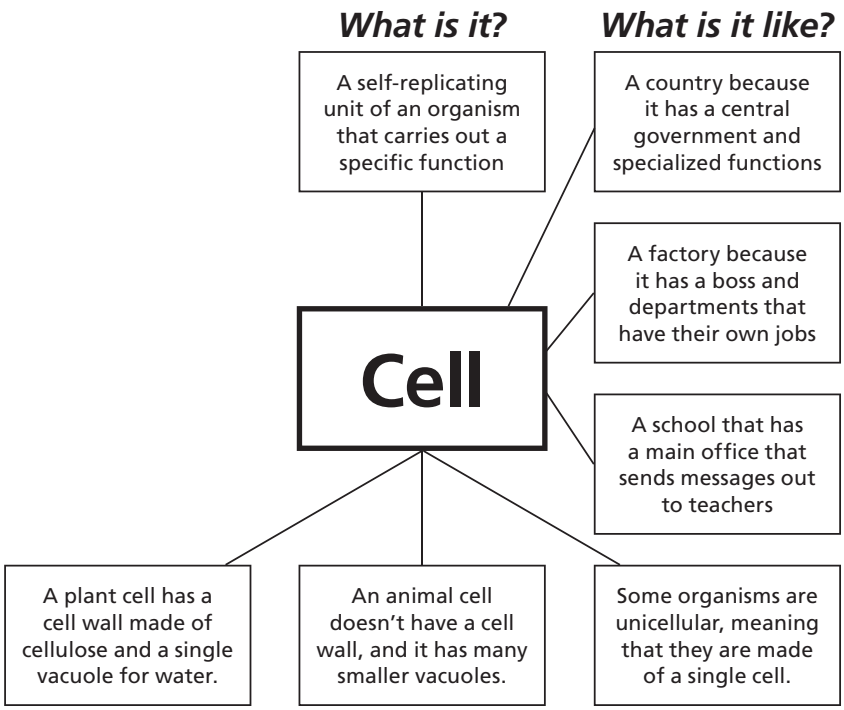
So much of acquiring new vocabulary is what Graves and Watts-Taffe (2002) call "word consciousness." This is an awareness of the acquisition of words, an appreciation for the usefulness of a word, as well as an understanding of where it comes from, how it is used, and its synonyms and antonyms. In Figure 1, we show a word map for the biology term *cell* that visually represents the term and its relationship to other words and concepts. A word map is an excellent way to introduce new terminology and increase the breadth and depth of students' understanding over time. Students add to the word map over time as these concepts are introduced to them.

How Do Students Learn Vocabulary?

There are a number of ways to ensure that students learn vocabulary, depending in part on which kinds of words students need to learn. Most of the words that students learn occur while reading, listening to others, and interacting with content (Graves, 2006). When students read books they can comprehend, they add concepts to their background knowledge and the names for those concepts develop rather quickly (Fisher & Frey, 2009). Of course, if students are reading texts that are too difficult for them, they are not likely to learn many words. For some words, especially specialized and technical words, students need intentional instruction if they are to develop deep understandings of the concepts behind the word labels (Bromley, 2007). We have developed a systematic approach to word learning that contains five phases.

1. Make It Intentional

Vocabulary instruction must be intentional. This requires that teachers actually teach words, not rely on an



Adapted from: Moss, B. (2003). *25 strategies for guiding readers through informational texts.* San Diego, CA: APD Press. Used with permission.

FIGURE 1 Word Map for Biology

doi:10.1598/e-ssentials.8032

"assign-define-test" model of the past. As part of making vocabulary intentional, selected words should be worthy of being taught. It does no good to be an amazing teacher of vocabulary if the words are already known by students or if the words are not important enough to warrant instruction. To address this, we have developed a series of questions that help teachers think through words that are worthy of instruction for a given unit of study. The questions we use to select words can be found in Figure 2.

Topic	Questions to Ask
Representative	• Is the word representative of a family of words that students should know? • Is the concept represented by the word critical to understanding the text? • Is the word a label for an idea that students need to know? • Does the word represent an idea that is essential for understanding another concept?
Repeatability	• Will the word be used again in this text? If so, does the word occur often enough to be redundant? • Will the word be used again during the school year?
Transportable	• Will the word be used in group discussions? • Will the word be used in writing tasks? • Will the word be used in other content or subject areas?
Contextual Analysis	• Can students use context clues to determine the correct or intended meaning of the word without instruction?
Structural Analysis	• Can students use structural analysis to determine the correct or intended meaning of the word without instruction?
Cognitive Load	• Have I identified too many words for students to successfully integrate?

From Fisher, D., & Frey, N. (2008). *Word wise and content rich, grades 7–12: Five essential steps to teaching academic vocabulary.* Portsmouth, NH: Heinemann.

FIGURE 2 Considerations for Selecting Vocabulary Words

2. Make It Transparent

As part of an intentional vocabulary initiative, teachers model their word-solving strategies. This aspect is much less about learning specific words and instead focuses on the ways in which readers figure out words they do not know. Most commonly, making word solving transparent involves thinking aloud while reading a piece of text. While reading, the teacher notices when he or she uses context clues, word parts, and resources (Fisher, Frey, & Lapp, 2009).

Context clues. Even though they only work about 50% of the time, context clues can help a reader figure out an unknown word. However, many readers do not know how to use the context clues provided in a text. In modeling the use of context clues, the teacher identifies a target word and the clues that have been provided. These clues can include punctuation, synonyms, antonyms, embedded definitions, and restatements. For example, the following sentence uses an embedded definition:

> This medieval glass was translucent, allowing light but not clear images to pass through. While translucent glass was often used in stained glass windows, it was also used for common items such as vases and drinking glasses. Many medieval stained glass pieces contain examples of axial or bilateral symmetry.

As the teacher modeled his thinking, he said, "So, I think that the word *translucent* is defined right here in the sentence. It seems like this works, that translucent is kind of clear but not see through. I'm picturing this in my mind, like the glass windows on page 147 in our book. I know that authors sometimes do this when they are going to use a word again and want to make sure that the reader understands the term."

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Word parts. Another way that readers figure out unknown words is by analyzing the morphology of the word. When the reader knows a prefix, suffix, root, base, or cognate, he or she can use that information to make an educated guess about an unknown word. For example, in the medieval glass sentence, the teacher could also model the use of the prefix *trans-* and the base *-lucent* to figure out the word. In this case, the modeling might have sounded like this, "I know that *trans-* means "across" or "through" or even "beyond." So the first part of the word *translucent* is about getting through or across. The word part *-lucent* is about light, so I'm thinking that this is about getting some light through."

Resources. Sometimes there are no context clues or word parts that will help the reader determine a word's meaning, as is the case in the text for *axial* or *bilateral symmetry*. In this case, the reader would resort to resources such as peers, dictionaries, or the Internet to figure out the meaning of these words. While modeling the teacher might say, "I don't see any context clues or word parts that will help me. I think that I'll look up *axial* and *bilateral symmetry* on the Internet. I'll type in "define: axial symmetry" because I know that using the define + colon feature will give me specific definitions."

3. Make It Useable

Although teacher modeling is important, it's not sufficient to ensure that students learn all of the words they need to know to be successful in school and beyond. They have to also use the words that they are being taught. There are a number of different ways to encourage students to use the words in the presence of their peers (Tompkins & Blanchfield, 2007). Some of the ways that we encourage students to use the vocabulary they are being taught include

- *Reciprocal teaching*, in which students are expected to use technical words as they summarize, predict, question, and clarify. We remind students before each reciprocal teaching session that they should notice the vocabulary of their peers and help one another use the words we are all learning. As an example, consider the following conversation students had about the water cycle:

Niijan: I can start. This section is about evaporation. I can summarize this section by saying that the sun heats up water in the ocean or lake or whatever, and it becomes vapor. I can remember evaporation because it has vapor in it.

Martha: I can clarify. That vapor is like steam, but most of the time you can't really see this happening. Evaporation is happening all of the time.

Sandy: Then is that the same as transpiration? Are these two words really talking about the same thing?

Miguel: Yeah, kinda. They are the same process, but the transpiration is from plants.

Niijan: So it's like evaporation from the plants?

Martha: Exactly. It's when water vapor leaves the plant, like through the leaves.

- *Partner discussions*, in which students talk with others about a specific topic or question. As an example, think-pair-share is a partner discussion task that lasts just a few minutes. When inviting students to partner talk, we remind them to use specific words and name those words. Sometimes, we even provide students with a sentence frame to start their partner discussions so we know for sure that they are practicing the targeted vocabulary. For example, when we were preparing students for debates, we asked them to practice recognizing an opposing viewpoint and responding to it by using the following frame: Though I concede that _____, I still insist that _____.

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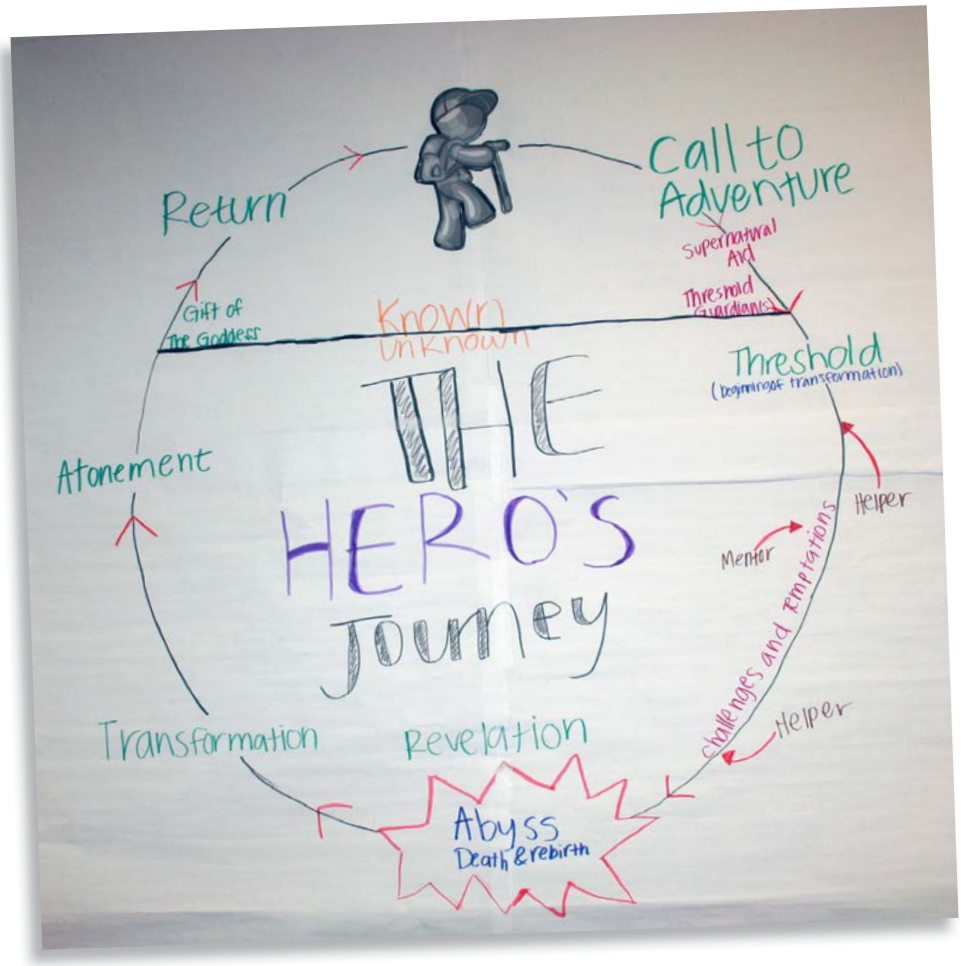
- *Vocabulary games*, in which students are encouraged to play with words. The range of vocabulary games is wide, including traditional games such as Jeopardy! or Wheel of Fortune and student-created crossword puzzles. Just think about how many words students will use when they have to create the questions and answers for Jeopardy! Another engaging idea is Mountain's (2002) flip-a-chip game, which uses poker chips or any other small, round chips. After being introduced to the game, students write prefixes, suffixes, and bases on the chips. They then flip the chips to determine if the word is a real one or not. Mountain introduces the game with two chips. On the first, one side says *pro-* and the other says *re-*. On the second chip, one side says *-duce* and the other says *-voke*. By flipping the two chips, students see that they can make the following words: *produce*, *provoke*, *reduce*, and *revoke*. By adding affixes and roots themselves, students learn a variety of combinations that do and do not produce real words.



4. Make It Personal

As students become more knowledgeable about specific words, teachers can expect that they will use them on their own. In fact, this is a critical aspect of word learning. As part of our intentional vocabulary instruction, we implement routines to ensure that students use the words that they have been taught and have used with their peers. In addition to developing students' word consciousness, some useful classroom routines for making vocabulary learning personal include

- *Graphic organizers*, in which students are expected to create a visual representation of an idea and do so using the vocabulary we are learning. The word map for *cell* in Figure 1 is an example of a graphic organizer that helps students comprehend content area vocabulary. As students create graphic organizers, they use the words they have been taught.

- *Generative sentences*, in which students create sentences using given words. This also serves as an assessment system, providing the teacher with information about students' word knowledge. Figure 3 contains some guidelines for creating generative sentences. For example, in the biology class for which students created the word map for *cell*, the teacher asked students to write a sentence with the word *cell* in the third position and include at least eight words total in the sentence. Some examples from the class included

  - *A plant cell is stationary, unlike an animal cell.*
  - *A plant cell is composed of cellulose, hemicellulose, and pectin.*
  - *Most animal cells are very small, invisible to the naked eye.*

5. Make It a Priority

Finally, for word learning to really become common in a middle school or high school, it has to be a schoolwide priority. This means that nearly every teacher focuses daily on vocabulary. Teachers select words worthy of instruction. Students hear their teachers modeling word solving across content areas. Further, students are expected to use the words in their interactions with one another and in their independent work. As part of this schoolwide initiative, teachers ensure that students are reading every day. This does not necessarily mean that the

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Letter Placing	• Word that begins with _____ • Word that contains _____ • Word that contains _____ in the _____ position
Generative Sentences	• Begin a sentence with _____ • End a sentence with _____ • Create a sentence with _____ in the _____ position
Word Limiting	• Provide a range (e.g., 8–10 words in length) • Provide a minimum (e.g., at least 5 words in length) • Provide a maximum (e.g., no more than 11 words in length) • Provide a specific length (e.g., exactly 8 words in length)
Sentence Patterning (Parts of Speech)	• Begin a sentence with a noun. • Use a proper noun in a sentence. • Use a noun and a pronoun in a sentence. • Include an adjective with a target word. • Use an adverb in the third position in the sentence. • Include a preposition in your sentence. • Use _____ as a gerund. • Use a noun infinitive to make an interesting sentence.
Sentence Patterning (Punctuation)	• Write a sentence that ends with an exclamation mark. • Ask a question using the word _____. • Write a sentence with an independent clause and a semicolon. • Use a colon with a list. • Include a parenthetical expression in a sentence.
Sentence Patterning (Elements of Style)	• Write an imperative using the word _____. • Create a sentence with a prepositional phrase. • Use a possessive with the target word _____. • Begin a sentence with a dependent clause. • Write a sentence that uses alliteration. • Use _____ as a simile. • Include an appositive in a sentence with the word _____.

From Fisher, D., & Frey, N. (2007). *Scaffolded writing instruction: Teaching with a gradual-release framework***.** New York: Scholastic.

FIGURE 3 Prompts for Generative Sentence Activities

school has a specific time for Silent Sustained Reading, although that is one way to ensure that students read. In some schools, students read in every class they attend. Importantly, they read things that are also aligned with the curriculum they are studying. Regardless, when vocabulary is a priority, students know that they are expected to—and supported to—learn a lot of words every week.

Conclusion

It is the job of every teacher in every discipline to ensure that students know the technical vocabulary of the discipline, the academic language to express it, and the word consciousness to purposefully seek out and learn vocabulary independently. Whether reviewing the research on vocabulary acquisition or the Common Core State Standards, the message is clear: vocabulary knowledge has a profound impact on our students' ability to learn within the discipline. An impoverished vocabulary negatively affects reading comprehension, as well as the ability to inform, persuade, and tell stories. Daily attention to vocabulary acquisition across the disciplines can result in the kind of broader and deeper word knowledge that students need within school and across their educational and professional lives.

doi:10.1598/e-ssentials.8032

IRA Resources for Vocabulary

Farstrup, A.E., & Samuels, S.J. (2008). *What research has to say about vocabulary instruction*. Newark, DE: International Reading Association.

Start with a comprehensive view of the research on vocabulary learning in Alan Farstrup and Jay Samuels's (eds.) *What Research Has to Say About Vocabulary Instruction* (2008). This edited book contains chapters by some of the foremost vocabulary researchers today on topics of interest to middle and high school educators.

Baumann, J.F., & Graves, M.F. (2010). What is academic vocabulary? *Journal of Adolescent & Adult Literacy, 54*(1), 4–12.

Explore the varying definitions of academic vocabulary in the September 2010 commentary in *Journal of Adolescent & Adult Literacy.* Respected vocabulary researchers James Baumann and Michael Graves compare and contrast the organizational definitions from a number of researchers and propose a classification system of their own that includes metalanguage and symbols as well. With increased attention on 21st-century and digital literacy skills, their commentary is thought provoking and sure to cause conversation.

Kieffer, M.J., & Lesaux, N.K. (2010). Morphing into adolescents: Active word learning for English-language learners and their classmates in middle school. *Journal of Adolescent & Adult Literacy, 54*(1), 47–56.

Read about research on vocabulary instruction for middle school students in the same September 2010 issue of the *Journal of Adolescent & Adult Literacy.* Michael Kieffer and Nonie Lesaux explain the principles of vocabulary instruction from an 18-week study with middle school English learners that resulted in a six-month growth in vocabulary knowledge and a nine-month increase in reading comprehension. Their intervention stresses the use of morphology (meaning of word parts), systematic instruction, and meaningful contexts for usage.

Yopp, H.K., & Yopp, R.H. (2007). *Viewing vocabulary: Building word knowledge through informational websites*. Retrieved June 28, 2011, from www.readwritethink.org/classroom-resources/lesson-plans/viewing-vocabulary-building-word-1081.html?tab=4#tabs

Listen to a podcast on learning science vocabulary through website research as Ruth Yopp and Hallie Yopp explain an innovative method for building technical vocabulary on ReadWriteThink.org. The webpage (www.readwritethink.org/classroom-resources/lesson-plans/viewing-vocabulary-building-word-1081.html?tab=4#tabs) includes a detailed lesson plan as well as the link for the podcast. Although this lesson is written for a science class, it is easily adaptable to any content area where students are conducting web-based research.

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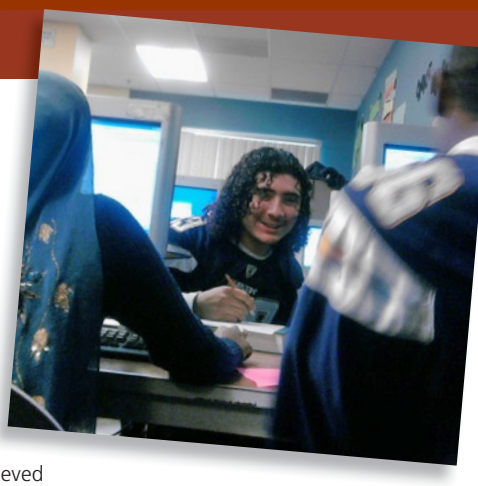

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ISSN 2326-7216 (online) | No. 8032

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doi:10.1598/e-ssentials.8032