
Academic Vocabulary Study: Embedded, Deep, and Generative Practices

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Introduction

Vocabulary is derived from the Latin word *vox* (voice in English). With our vocabularies, we *call out* and *give* voice to new ideas and concepts that beg to be named. And due to its prominence, new ideas are constantly being added to the English vocabulary, which has surpassed one million words. Vocabulary knowledge is crucial to successful comprehension—current standards recognize this, and take a fresh look at vocabulary learning. In particular, standards now highlight teaching academic vocabulary as

a major instructional shift to improve students' ability to ACT (Access Complex Text). Two types of academic vocabulary have been described: general and domain-specific. General academic vocabulary is composed of words and phrases found in all academic texts, such as *analysis*, *attribute*, *contrast*, *discussion*, *however*, and *in particular*. These general academic words are similar to Tier 2 words. Domain-specific academic vocabulary includes specialized vocabulary, and are usually related to a particular field of study like the word *photosynthesis* in biology, *parallelogram* in geometry, and *democratic republic* in social studies or government.

When teachers plan instruction, they examine texts for general and domain-specific vocabulary to explore in more depth; they look for the academic vocabulary that will serve students consistently as tools in their reading and writing. This paper presents principles of academic vocabulary learning and instruction, followed by several practices to help students acquire the ability to learn new ideas and vocabulary, and to name and implement these newly learned concepts.

General and Domain-Specific Academic Vocabulary

A comparison of two words further illustrates the differences between general and domain-specific vocabulary. This exploration lays the groundwork for the principles and activities for teaching vocabulary.

Procedure: A General Academic Vocabulary Word

The word procedure is a general academic word because this word can be found in many content areas. Consider words related to procedure: proceed, procedural, procedurally, and procedures. These are not many words to draw on, but learning can be much deeper when the context of procedure

is broadened in phrases like the following: *bureaucratic procedure, cataloged procedure, civil procedure, contingency procedure, diagnostic procedure, emergency procedure, operating procedure, parliamentary procedure, standard operating procedure (SOP), standard procedure, standing operating procedure, and surgical procedure* (www.onelook.com).

Tectonic: A Domain-Specific Vocabulary Word

A domain-specific word like tectonic has both literal and figurative meanings, but for the most part, the use of the word is found in geology and physics. As you may recall, earthquakes and tsunamis can be caused by tectonic shifts in which two landmasses collide. In a dictionary search, other forms of the word are found: *tectonics, tectonical, tectonically, textonism, tectonite, tectonism, tectono, tectonometer, tectonophysicist, tectonophysics, and tectonosphere*. While students benefit just from reading and thinking of the meaning of these variations, most of these forms are simple grammatical shifts.

Consider how much more meaning is brought to the adjective tectonic when the search is broadened to phrases: *tectonic-uplift, tectonic activity, tectonic basins and rift valleys, tectonic boundary, tectonic breccia, tectonic change of sea level, tectonic conglomerate, tectonic creep, tectonic earthquake, tectonic environment, tectonic gap, tectonic keratoplasty, tectonic map, tectonic motion, tectonic movement, tectonic plates, tectonic stratigraphy, tectonic theater project, tectonic theory, tectonic window, tectonically active, and tectonics zones of Pakistan* (www.onelook.com). Students' sense of the word tectonic becomes deeper as they consider the meaning of these phrases. All but two of these phrases relate to science, particularly geology. As a classroom activity, students could work with partners to uncover the meaning of a few phrases that they then would share with their classmates either orally or in a classroom vocabulary notebook.

When *tectonics* is scrutinized morphologically for its root, other related words come into play—words that, again, deepen understanding. *Tectonics* was used in geology for the first time in writing in 1899, and is derived from Latin and Greek terms related to building which can be found in *architect*—literally, the chief (*arch*) builder (*tect*). What a wonderful story this makes, but this may be as far as most students examine the word. You'll find, though, as intermediate grade students become more accustomed to using etymological resources, they become enticed to look more deeply to learn that *tek* - is the Indo-European root for "to make" and is the root of words like *textile* and *texture*. Vocabulary study makes us deeper thinkers. The free etymological resources used in the explorations shared here are presented in the activities to follow.

Five Principles of Academic Vocabulary Instruction

These five principles of vocabulary study can serve as a guide to organize instruction, and they highlight the profound role vocabulary has in expanding students' thinking.

1. **Vocabulary learning is intertwined with concept development.** Words describe ideas, and, in discussions of vocabulary, students expand and refine their thinking. The key to vocabulary learning is to uncover the concepts that underlie the vocabulary.
2. **Vocabulary is learned in context.** Students learn new vocabulary through extensive reading and writing. It is impossible to teach students all of the vocabulary words they need to know. Rather, the goal is to teach students how to examine and think about words. Teachers show students routines—like those that follow—to investigate the meanings of new vocabulary as they read for comprehension and write for clarity of expression.
3. **Vocabulary is not about teaching just words.** To learn new vocabulary, students need to examine phrases lodged in sentences and paragraphs. The importance of phrases in the discussion of teaching related words can be seen in the examples above. The days of learning a random list of vocabulary words are over; vocabulary must come from the texts students are studying and must be supported by plenty of examples.
4. **Vocabulary instruction is deep and generative.** “When students learn one word, they learn ten words,” said a good teaching friend, Tamara Baren. As in the examples above, studying related words and phrases widens the context for vocabulary learning. In deep word study, students examine related words and phrases, and this expands their knowledge of the concepts of underlying words.
5. **Vocabulary instruction involves the study of morphology, the structure of words.** In vocabulary instruction, students learn the meanings of prefixes and suffixes, and this makes it possible for them to derive the meaning of base words and roots. English grammar is incorporated naturally in vocabulary study as students examine what happens when suffixes are added to bases and roots. For example, they see that compete, a verb, turns into a noun when -tion is added, or that an adjective is formed from a noun when -ance is added to a word (brilliant/brilliance). The reading fluency of intermediate readers advances as they learn about words morphologically. In the very beginning of an eye fixation, mature readers peel off the affixes very rapidly (30 milliseconds) to get at the meaning of the roots and base words.

Based on these principles, and the distinction between types of academic vocabulary, activities to scaffold students' learning of both general and domain-specific academic vocabulary can be examined.

Vocabulary Activities

Teachers establish several key vocabulary activities that, once taught, are used throughout the school year. Here are four activities that are a part of many teachers' vocabulary study routines.

Vocabulary Concept Sorts

Vocabulary concept sorts are used at all grade levels with either words or pictures. To create a concept sort, teachers review the text for vocabulary study, including the bolded vocabulary. These words and phrases can be written onto a template with twenty-four boxes in three columns and eight rows. Often with a partner, students cut up the template and then sort the items according to the teachers' instructions. One rule is that students must say the words aloud quietly as they sort. To bypass the use of a sorting template, students can work from a randomized list of the vocabulary. Students then write the words into the appropriate meaning connection columns.

Figure 1 (on the next page) presents an example of a written sort for the Civil War. Sorting with partners and sharing the sorts in heterogeneous groups adds the support needed for students reading below level: if they have difficulty reading the words, they learn from their classmates as they read the words. They also learn new ideas when they share their rationales for their sorts.

Sorts can be described as either closed sorts, in which the teacher defines the sorting categories, or as open sorts, in which students create the categories. Usually, teachers will begin with closed sorts to give students a sense of how vocabulary is sorted conceptually. Students usually write these sorts into their vocabulary notebooks. Occasionally, teachers have students generate a written reflection to explain why they sorted each column the way they did. In English and the Language Arts, these concept sorts focus on figurative language in which students sort synonyms and examine nuances in words, or sort words by suffixes and parts of speech.

Concept sorts can be conducted at the beginning, middle, and end of a unit of study, and can be considered formative assessments. At the beginning of a unit, teachers can see if students can read the words accurately, which helps them understand students' conceptual knowledge prior to formal studies. In the middle and end of a unit, teachers can see how easily students sort, as the students are asked to add related terms. Teachers and students alike can see how well they have generalized the ideas and concepts in the unit.

Figure 1: Vocabulary Concept Sort

Civil War Concept Sort		
Military	Political	Miscellaneous
South ambush Appomattox Court House Fort Sumter Ulysses S. Grant Union blockade infantry John Brown Harpers Ferry Robert E. Lee conscription arsenal Yankee Rebels artillery Battle of Bull Run / Manassas Battle of Gettysburg brigade Clara Barton Jefferson Davis ironclads North regiment skirmish	secession abolitionist John Brown Confederacy free state slavery Confederate States of America Emancipation Proclamation Dred Scott decision border states Federal Frederick Douglas Fugitive Slave Act sectionalism Stephen Douglas Gettysburg Address Kansas-Nebraska Act popular sovereignty prejudice Republican Party Abraham Lincoln Lincoln / Douglas debates Missouri Compromise states' rights Thirteenth Amendment	antebellum reconstruction

Reflection: The first column includes terms about war, its battles and famous soldiers. The second column has a lot of difficult concepts that I need to learn more about. It includes people and terms related to slavery. I do not know what the words in the third column have to do with the Civil War.

Picture sorts are conducted mainly in the primary grades when students are unable to read the vocabulary they are asked to sort. Furthermore, they are particularly useful for English learners when they do not know the words in English. With partners, students sort the pictures and then give their reasons for sorting the way they did. In bilingual settings, picture sorts are a way for students to share the vocabularies of their primary languages. The picture sorts provide additional experience with vocabulary from read alouds; for example, after a read aloud of *Tops and Bottoms* (Stevens, 1995),

students sort pictures of parts of plants conceptually. In one study, students involved in sorting the pictures from their read alouds heard the words over fifty times, and, in a delayed recall, they knew twice as many words as students who only heard the stories read aloud (Carpenter, 2010).

Vocabulary Self-Assessments

After selecting the vocabulary to study for a unit, teachers should ask students to rate their knowledge of the vocabulary. Figure 2 illustrates a student's self-assessment of his knowledge of two terms: *abolitionist* and *Dred Scott Decision*.

The form has room for students to assess their knowledge at three points over their studies. In this example, it is clear that Antonio could learn more about the Dred Scott Decision. Teachers usually include ten to fifteen items and leave a few rows for students to add other vocabulary they think is important.

Figure 2: Vocabulary Self-Assessment Form

Example of a Vocabulary Self-Assessment Chart				
Title	Name		Codes and Dates	
Civil War	Antonio Estrada		X February 15	February 23 # March 8
Knowledge Rating of Vocabulary	Never heard of it	Heard it	Have some ideas	Know it well
Abolitionist	X			someone who wanted to abolish slavery
Dred Scott Decision	X		# decision by Supreme Court, slaves as property	

Vocabulary Notebooks

To build independence and ownership, ask students to work with partners and small groups to choose vocabulary in their texts that they think is important to study. The vocabulary students choose are usually the same as what their teachers would select, and teachers add vocabulary students have overlooked. Vocabulary notebooks are a place for students to record vocabulary they find interesting and which they study deeply. There are six steps to create an entry, as illustrated in Figure 3 (Bear, et al, 2012).

Figure 3: Vocabulary Self-Assessment Form

abolitionist – someone against slavery		
abolish abolition abolished Spanish: <i>abolir</i> , <i>abolicionista</i>	-tion	-ist
abolitio, from abolere to destroy To get rid of	condition attention Changes to a noun	chemist geologist Changes to a person
“The defeat taught Lincoln that abolitionists and other extreme antislavery men would rather be right....” p. 84		

Teachers model vocabulary selections and the deep study of words several times before asking students to work independently or with a partner to create their own entries. Modeling includes showing students how to use dictionaries and etymological references to create their entries. Each week, students study several words in-depth, and then teach their classmates what they learned. They may share their work orally, a print or digital class vocabulary notebook, or create a chart to post in the room. Students familiar with other languages may include cognates in their entries. With 10,000 to 15,000 cognates between English and Spanish, students may include Spanish vocabulary. Vocabulary notebooks can be divided into separate sections by domain.

Vocabulary Notebook Entry Directions

1. **Collect the word.** Find an important, interesting, or difficult word. Read around the word and think about its possible meaning.
2. **Record the word and sentence.** Sometimes sentences are too long, so parts of the sentence can be recorded.
3. **“Take apart.”** Separate word parts - prefixes, suffixes, roots, and bases.

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4. **Think of related words.** Brainstorm related words by word parts—prefixes, suffixes, roots, and bases.
 5. **Study the word** in the dictionary and other resources, and record related words and interesting information.
 6. **Review and share.** Prepare an explanation for each word part to share with classmates.

Online Resources

There are numerous dictionaries and etymological websites for students to refer to as they study their vocabulary. Below are a few favorite vocabulary websites. At these sites, students can find related words, word histories, explanations of word roots, and examples of the words used in context. Experience with these websites teaches students how to use dictionaries and other vocabulary resources.

NOTE: Access to these resources may require a request to instructional technology personnel to lower firewalls for students. If your school/district employs online safeguards or reviews, please ensure that these sites are reviewed and approved for use. While these sites are free, there are advertisements in each. Neither Dr. Bear nor McGraw-Hill Education are responsible for the content or advertisements.

- **www.onelook.com** is a powerful website. Typing in a word sometimes reveals twenty links to various dictionaries. Using their simple codes, students can easily call up a thousand related words. For example, typing syn* presents a thousand words that begin with this prefix, which means together.
- **www.etymonline.com** is one of the best websites to provide etymologies. Students learn about word origins as well as short, quaint stories of how the words have been used over time.
- **www.visuwords.com** is a graphical dictionary that creates webs with the different meanings of words positioned around the word requested. Each of the branches in the web presents a link to related words, as well as a link to antonyms. In addition, different parts of the web represent various attributes and parts of speech for the word that is being studied.
- **www.yourdictionary.com**, like many dictionary sites, provides a brief definition of the word, a pronunciation of the word, and several examples of the word used in sentences.
- **www.collinsdictionary.com** is one of the best dictionaries for images. It also provides translations in French, German, and Spanish.

Using these resources to study vocabulary makes it possible for students to study words deeply. Seeing a word or phrase used in a variety of contexts, learning the history of vocabulary, and studying related words makes learning vocabulary interesting. Vocabulary study broadens one's knowledge and divulges the evolution of our thinking. In one of B. F. Skinner's last articles, he wrote that "etymology is the architecture of thought"—for, in the study of words, students learn how language and ideas have evolved as they learn about the subtleties of language and nuances in meaning. This vocabulary knowledge enriches our lives and deepens students' understanding of the world around them.

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