Teaching Academic Vocabulary Words

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Content area teachers tend to focus on technical vocabulary words like *photosynthesis* and *distributional property* because they directly relate to our teaching topics. Still, the truth is that many general academic words can also make a huge difference in students' understanding of the texts we give them. Words like *nonetheless*, *alternatively*, and *subsequently* are used across all subject areas, but they have particular connotations that can influence comprehension of content-specific readings. Both general and content-specific academic words can create comprehension challenges for students. In this post, I will summarize some of the findings from a recent analysis of what makes academic words hard for students (Lawrence et al., 2021). We will find that some of the results confirm common perceptions about what makes academic language challenging to learn. However, this study was novel in testing how five different ways of measuring words each related to how well students knew the words. Furthermore, this study examined if the features that made words harder for better readers were the same as those that made vocabulary harder for struggling readers. Hopefully, these results will extend your understanding of the challenges posed by these words for your students and provide some ideas and tools for supporting vocabulary and content learning.

Three Tiers of vocabulary words

In their book *Bringing Words to Life: Robust Vocabulary Instruction* (2002), Isabel Beck, Moddy McKeown, and Linda Kucan distinguish three tiers of words.

Tier 1: Tier one words that are well-known by all native speakers (like *banana* and *ice*) that occur frequently in everyday speech.

Tier 2: Tier two words are general academic vocabulary words that might be seen in text from any discipline but are less frequently used in speech (like *however*, *anticipate* or *incorporate*)

Tier 3: Words that are only found in texts written for specific disciplines (like *hypotenuse* or *stanza*)

Two Kinds of Academic Vocabulary: Tiers Two and Three

Our purpose for teaching these words and our expectation for student understanding varies across tiers. We may not need our students to be able to provide a definition of a tier 2 word such as *however.* Instead, we hope that they can correctly employ the word to support a nuanced argument. That does not mean that it is not critical to accomplishing our content-specific goals. For instance, Ohio's Learning Standards for Social Studies require that students understand how "historians analyze cause, effect, and sequence and correlations in historical events, including multiple causations." To discuss multiple and competing causal explanations, students need to understand and use words like *however*, *nonetheless*, and *not withstanding* (to learn more about the relation between these words and higher-order argumentation see here).

On the other hand, being able to provide a formal definition of *hypotenuse* is essential to being able to understand the term in a problem. In order for students to develop such a precise and accurate understanding, we need explicit vocabulary instruction. We need to be clear about how deeply we expect our students to understand and produce key vocabulary words in our unit and design assessments that align with those goals.

Lexical Characteristics

In *Reading comprehension and academic vocabulary: Exploring relations of item features and reading proficiency*, my co-authors and I identified 22 empirical word characteristics. We ran a factor analysis on a large set of words to identify the underlying structure of the characteristics. We found the 5 dimensions explained variance in the 22 measures. These five word dimensions seem to be underly most or all of the ways that we can categorize and code individual vocabular items. The five dimensions are complexity, frequency, polysemy, proximity, and diversity.

· **Complexity** is the orthographic and morphological difficulty of the word. The word *feline* may be more challenging for some students to learn than the word *cat* simply because *feline* has more syllables, letters, and morphemes.

· **Frequency** refers to how often a word is used in language or writing. A word such as *time* frequently appears in oral and written language; *zenith* does not.

· **Polysemy** refers to how many meanings a word has. Some words have multiple meanings that are distinctly different (e.g., *bat, bear*). But, more typically, words have related senses, such as the word *cell* in *political cell* or *stem cell*. Multiple meaning words tended to be more frequent and used in more divers contexts.

· **Proximity**. Words with frequent phonemic patterns or letter sequences reside in denser neighborhoods than words with irregular patterns. For example, the pattern "oon" appears in a fairly dense neighborhood (e.g., *noon, soon, moon*), whereas "oose" appears in only a handful of words (e.g.,

goose, noose). Both phonological and orthographic neighborhood density have facilitative effects on visual word recognition, lexical decision, and naming tasks.

· **Diversity** in vocabulary refers to both the range of texts that a word can be found in, and the range of words that it can be found next to. For example, if a word is used in a wide variety of contexts, then it has high text diversity. A word like *therefore* might appear in many contexts (high diversity), whereas a word like *pancreas* will be more restricted in the range of texts and contexts it is used in. Diversity can also refer to the local context of a word. For instance, *amok* is very likely to found adjacent to the word *run* but very unlikely to appear next to other words such as *trot*, *walk*, or *jog*.
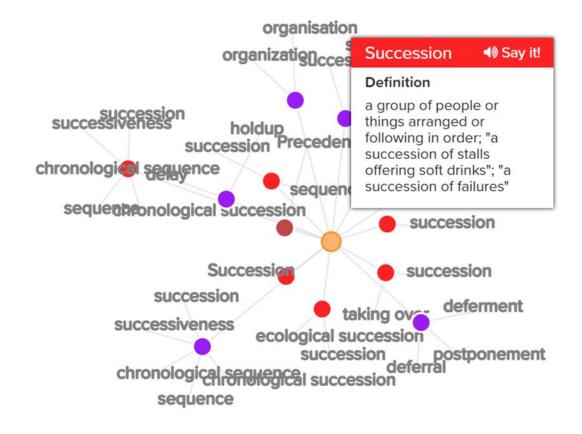
Teaching Vocabulary: Key Takeaways

Next, we examined if words with different dimensions were more challenging and, if so, for which students. Here are the highlights and implications.

Polysemous words are easier for everyone.

Academic words with multiple related meanings are easier for students to learn and remember. However, this is only true if students are given the opportunity to encounter and learn the different senses of a word in context and understand how the senses relate to one another. It's helpful to point out the connections between a *political cell*, *somatic cell*, or a *cell* in a spreadsheet. It creates a mutually reinforcing web of relations for students, which appears to support robust word knowledge and retention. On the other hand, when a word has multiple alternative senses that a student is not aware of, this can cause confusion for them.

One tool that can help you check your own knowledge of the multiple meaning of a word is www.lexipedia.com. Here is the entry for the word *succession*. You can immediately see a visual representation of the senses of succession and the other words these senses are connected to. You can easily call up the different senses of a word by hovering over a target with your mouse.

Complex words are harder for struggling readers

Complex words (words with more letters and syllables) are harder for struggling readers even though word length does not matter as much for better readers. How do we support spelling in our content area classes while sticking to our primary mission of building student content knowledge and skills? Morphology is the study of the structure and form of words. It includes the way words are put together in a language, the meaning of these words, and how they relate to each other. Morphological patterns in words are important in our content areas, and focusing on morphology allows us to support our students' spelling and decoding skills while still keeping our content focus. Helping students see morphological connections is probably our highest-leverage tool for supporting older students' spelling and orthographic knowledge.

For example, let us say that *succession* is a target vocabulary word, and I worry that some students will have a hard time because it is long and might be hard to spell or read. Taking a minute to help students see

the connection between *success*, *successor*, *successively* and the target word *succession* can help your struggling readers establish a strong representation of the word.

One tool that can help you find related words is the www.onelook.com, a meta-dictionary that lets you search with wildcards and give results by length or frequency. For instance, querying **success*** sorted by commonness results in

1. succession
2. success
3. successor
4. successful
5. successive
6. successively
7. successfully
8. successiveness
9. successional

When we take a little time to build connections between our target words and words that our students already know, it is much easier for them to connect the new information with existing knowledge.

Review more words

High-frequency words are easier for all students. Because they are frequently encountered in everyday language or when students read, students have repeated opportunities to use context clues to develop an understanding of a frequent word's meaning even if it is not explicitly taught. Interestingly, the relationship between frequency and vocabulary knowledge is not as strong for struggling readers. The result is that sometimes we may want to do a quick review of a word even when some or all of our students know it. Since it is unlikely that our struggling students will ask for clarification when they do not know a high-frequency word, sometimes it is better to do a quick review of an important word even if our stronger readers might roll their eyes.

Focus on Connections between Academic Vocabulary Words

Understanding connections between words is critical to deep work knowledge. For instance, proximity can only be considered in relation to other words. Other vital dimensions – diversity and polysemy, for example– are nearly impossible to teach without referring to other words and word meanings. Our best bet is to preview our target words as we prepare to teach a unit and look for connections and other words that will be essential in teaching our target list. Vocabulary instruction is most effective when focused on sets of words and their connections, not only individual target words. Even advanced high school and middle school classes can benefit from using a living word wall because it helps make the connection between known words and new vocabulary words explicit. Strategies like hexagonal thinking build on explicit connections and help learners consider the nuances and complex connections between a set of words and ideas.

Further reading

In her book *Teaching Word and How They Wo*rk, Freddy Hiebert highlights a set of instructional approaches and information that aligns with our research findings. One of the highlights includes a short chapter on the history of English and how understanding a little information about the history of and connections between words can produce big payoffs for students. This pithy book also includes strategies and resources for systematically supporting morphology, knowledge of multiple meanings, and semantics relationships between words. Dr. Heibert shares examples at the Text Project website: https://textproject.org/teachers/vocabulary-instruction/ and provides rich insight into her thinking about these resources in her book.

Conclusion: Teach Vocabulary Words *and* Connections

Teaching vocabulary is a complex skill, and it takes time to find strategies that work for you. The five factors we have identified in our research (complexity, frequency, polysemy, proximity, and diversity) should be considered as you identify word sets to focus on in your class. When teaching vocabulary, it is important to think about the level of knowledge you expect for each target word and look for opportunities to emphasize relationships between words.

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