Word Wisdom:
An Effective, Research-Based Vocabulary Program

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Vocabulary—A Foundation of Literacy

A crucial foundation for literacy is an extensive meaning vocabulary—a large set of words that we know and understand when we encounter them and that we can use appropriately to express ourselves. Direct and easy access to word meanings supports fluent reading and comprehension, while fluent reading with understanding helps to build access to a greater number of word meanings. Thus there is a critical, mutually supportive relationship among these three essential pillars of literacy: meaning vocabulary, fluency, and comprehension.

The Demands of English Vocabulary

For native and especially non-native English speakers, developing such a vocabulary can be challenging because English is unusually complex. The editors of the *Oxford English Dictionary* estimate that English contains at least a quarter million distinct words, many more than other comparable world languages (Oxford Dictionaries, 2010a, b). One reason for this large vocabulary is that over time English has incorporated substantial elements of Germanic, Romance, and Classical (Latin and Greek) languages, giving it a multilayered structure. In addition, many individual words have been either adopted as-is or adapted with modifications from other languages. Many synonyms from the different layers and additions can represent the same general concept, but each one may suggest a slightly different shade of

meaning, may be more appropriate in a specific context, and/or may indicate the background of the speaker or writer. And English vocabulary continues to expand and evolve over time. As new concepts and ideas are developed, new words are coined, and old words are given new meanings. These adaptive, expansive qualities give English vocabulary exceptional powers for expression and communication, but they may also put significant demands upon the learner.

Early Vocabulary Learning

Very young children learn the meanings of words and the pronunciations of those words primarily from their families and caregivers in familiar surroundings. Thus the sizes of their vocabularies are dependent upon the sizes of the vocabularies of those around them and their interactions with them (Hart & Risley, 1995). As children participate in formal instruction, they are also introduced to the language of schooling and literacy; this may be more or less familiar to them and thus more or less demanding. Studies have consistently shown that reading aloud to early learners can increase the size of their vocabularies (Penno et al, 2002; Biemiller & Boote, 2006) and acquaint them with the beginnings of the literate language that they will need for later academic success.

Vocabulary Growth During School Years

By the end of second grade, an average student has learned about 6,000 root word meanings. By sixth grade, the average student has added nearly 4,000 more (Bowers & Kirby, 2010). Graves et al (2014) suggest that research-based

estimates of how many words students can learn a week from instruction fall in the 8–15 word range (e.g., Baumann et al, 2009–2012; Biemiller & Boote, 2006; McKeown, Beck, Omanson, & Pople, 1985). Assuming an ideal, uninterrupted 36-week school year, students might optimistically be taught between 1,150 and 2,150 words over the same four-year period. Even their own recommendation of teaching 20 words a week, *assuming all were learned,* would account for less than 75% of the words the average student would learn during this time period *under the best conditions.*

At the same time, estimates of the number of words students encounter in school texts are truly daunting. Nagy and Anderson (1984) estimated that students encounter about 88,500 word families and approximately 180,000 individual items (Anderson & Nagy, 1992) in school English in grades 3–9 with the average student learning about 40,000 words (Stahl & Nagy, 2006). Moreover, the vast majority of English words occur highly infrequently, less than 10 times per million words of running text (Hiebert, 2005), but they are often critical, even crucial, to the content with which they are associated.

Why Vocabulary Instruction?

Clearly, teachers can teach only a small portion of the words students need to learn—the vast majority of these must come from listening, reading, and studying. Yet the regular and direct teaching of a chosen set of words is critical to students' development as readers and writers. These vocabulary words will not only be important in themselves, but they will also serve as anchors and examples for self-directed

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learning. Regular instruction keeps students focused on the importance of word learning and gives them the tools to unlock word meanings as they encounter new words in their assigned and independent reading.

The Academic Effects of Direct Vocabulary Instruction

Direct and systematic instruction in vocabulary for students during their elementary school years can have many significant and long-lasting effects.

- **Vocabulary instruction increases reading success.** The National Reading Panel recognized vocabulary as one of its five pillars of literacy because studies have consistently shown strong relationships between student achievement in comprehension and the extent and depth of their knowledge of word meanings (NICHD, 2000). During the past 30 years, researchers have found correlations between vocabulary and reading comprehension in many studies that included students of all ages—from kindergarteners to teenagers (Ouellette, 2006). Researchers have also demonstrated that teaching text-specific vocabulary improves comprehension of those texts and that teaching vocabulary in general significantly increases reading comprehension (Biemiller & Boote, 2006).

- **Vocabulary instruction increases academic learning across all subjects.** Several experts have hypothesized that the decrease in reading scores in the middle grades, what is sometimes called the "fourth-grade slump," can be largely attributed to the increasing vocabulary demands and new ideas included

in literature and content materials (Hirsch, 2003). Vocabulary of texts for beginning reading instruction is relatively simple because learning to read is easier when the child can match written words with those that are already a part of their spoken vocabulary. But as texts become more complex, their words and concepts often range "beyond the everyday experience of children" (Chall & Jacobs, 2003), and so beyond students' everyday oral vocabularies. Even students who demonstrate good reading comprehension in the early grades can become less successful during this transition if their vocabulary is not strong; thus many educators suggest that teaching vocabulary in the early grades will increase student learning in their later academic careers (Biemiller, 2001).

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- **Vocabulary instruction can level the field for at-risk students.** Disturbingly, research has indicated that at-risk students often begin school with smaller vocabularies than their peers and that the extent and depth of their vocabularies grow at a slower rate (Hart & Risley, 1995). Without intervention they fall further behind their classmates as they progress through the grades (e.g., Chall & Jacobs, 2003). Students who are in the bottom quartile of their grade groups have acquired roughly 33% fewer vocabulary meanings (about 2,000 less in grade 2, where the average is about 6,000); without intervention, this gap can follow them for their entire schooling, leaving them two grade levels behind their peers (Biemiller & Boote, 2006). However, with early intervention these students can catch up. Experimental evidence

suggests that at-risk students can learn vocabulary at the same rate as other average children and can reach "grade level" reading with effective vocabulary intervention and instruction (Biemiller, 2001).

- **Vocabulary instruction can increase test scores.** The National Assessment of Educational Progress Reading Assessment (NAGB, 2010) explicitly tested students' knowledge of vocabulary in the context of reading passages. According to the NAEP, "all vocabulary items will function both as a measure of passage comprehension and as a test of readers' specific knowledge of the word's meaning as intended by the passage author" (2010, p. 33). In other words, in order to succeed on this national assessment, students must apply their knowledge of word meanings to the understanding of a reading passage rather than simply memorize definitions in isolation. Direct vocabulary instruction in the language arts classroom prepares students with specific knowledge and skills to understand and define words in context. In addition, this instruction prepares them to encounter and comprehend new words in other domains, such as science or math, and to increase their success on assessments in those areas as well.

Effective Vocabulary Instruction

Direct and Indirect Learning

Researchers know that students add words to their vocabularies not only through instruction but also through exposure to language at home, from the media, and from nonacademic reading (Biemiller & Boote, 2006). Combining indirect exposure with direct instruction provides

students with solid word meanings; in one study, for example, the combination of indirect learning (hearing a story read aloud several times) and direct instruction (explaining the meaning of target words along the way) had the effect of increasing the students' knowledge not only of the target words but also of the words that were not targeted for instruction (Penno, Wilkinson, & Moore, 2002).

As a result of the body of research showing that increases in vocabulary knowledge can lead to gains in reading comprehension, the National Reading Panel similarly concluded that vocabulary should be taught directly as well as indirectly and that vocabulary instruction should be incorporated into reading instruction (NICHHD, 2000, pp. 4–24). As to the specifics of that instruction, Graves et al (2014) succinctly summarize what has been learned over the last thirty years: "Research has repeatedly shown that effective vocabulary instruction should include both a definition of a word and the word in context, provide multiple exposures to the word, involve students in discussion and active processing of the word's meaning, and help them review the words in various contexts over time . . ." (p. 335). Vocabulary study should also include strategies that help students when they encounter unknown words.

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Word-Learning Strategies

Since teachers cannot provide instruction for every word, they must offer students word-learning strategies that allow them to determine meanings on their own. Three sources in particular can provide useful information about a word's meaning: context, word structure, and reference materials (e.g., dictionaries, thesauruses).

However, students require specific, detailed instruction on how to access information from these sources if they are to be used effectively. Simply advising students to use context is not as effective as specifically explaining what kinds of clues may be available from the context and modeling how to search for them (e.g., Blachowicz & Fisher, 2014, Rasinski & Zutell, 2010). Many English words are built from combinations of prefixes, roots, and suffixes; about 60% of these have Latin or Greek origins. A number of studies have shown that students can effectively use their knowledge of these individual word parts to help them discover the meaning of the whole word (Armbruster, Lehr, & Osborn, 2001) and that instructional attention to morphology and syntax relates to positive growth in vocabulary (e.g., Silverman et al, 2014).

Word-learning strategies should also include how to use dictionaries and other references to find word meanings, determine which meaning applies to the current context (Armbruster, Lehr, & Osborn, 2001), and examine relationships between words, such as synonyms, antonyms, parts of speech, etc. (Silverman et al, 2014). Finally, sources are best used in combination and as checks on each other rather than in isolation.

Word Wisdom: An Effective, Thematically Grounded, Research-Based Program

Word Wisdom was developed to be consistent with these research findings to deliver effective vocabulary instruction and maximize student learning.

Word Selection

While research has yielded consistent findings about the elements of effective instruction, there is less agreement about which words should be taught in an effective program. Graves et al (2014) outline four major approaches to word selection:

1. Word frequency lists based on words students typically know in specific grade ranges (e.g., Biemiller, 2009) or that appear in content area materials at different grade levels (e.g., Marzano, 2004)

2. Genre approaches that differentiate between narrative and informational vocabulary (e.g., Hiebert & Cervetti, 2012)

3. The Tier approach (Beck, McKeown, & Kucan, 2013) with its focus on Tier Two words that appear frequently across a wide variety of domains and subjects, have instructional potential, and are ones for which students have the general concept but that add sophistication, nuance, or precision to their vocabularies

4. Their own categorization of unfamiliar words as *essential words* (critical for understanding the reading selection), *valuable words* (somewhat similar to Tier Two words), *accessible words* (more common, higher frequency words not likely to be understood by students with limited vocabularies), and *imported words* (not included in the reading selection but can enhance readers' understanding of the text)

In many vocabulary series, words appear to be arranged into lessons with little rhyme or reason as to why they are studied together.

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While incorporating several of the concepts from the major approaches listed above (e.g., word tiers, word frequency/grade level, informational/content vocabulary), *Word Wisdom* provides a unique approach to word selection specially designed to support both the learning of individual words and the teaching of effective independent word-learning strategies. Words in each unit are selected to fit a concept or theme appropriate for that grade level (e.g., time, measurement, communication, sight).

Connecting words to a common theme often supports other parts of the curriculum and strengthens the connections across the words and among the concepts they represent. The words are then embedded in reading selections specially written or selected to fit that theme. Embedding the words in supportive reading selections provides opportunities for instruction and guided practice with locating specific context clues and practicing a context strategy or procedure. For each unit, at least two or three roots (e.g., sight: *vis, spec, sign*) are represented in the words selected for study. Including words that connect specific roots to the theme provides teachers opportunities to develop students' morphological skills and expand the words to be studied to other members of the root word family. A more detailed discussion of this instructional model is presented in the following paragraphs.

Instructional Processes and Procedures

In *Word Wisdom,* students encounter each word several times during the course of a lesson. These multiple exposures support deep processing as students are directed to unlock, process, and apply word meanings. In addition, word

journal writing activities help students build connections between word uses and meanings and their personal experiences.

Units comprise three instructional lessons and a review lesson. These follow the **Theme-Context-Roots-Reference-Review (TC3R)** format (Rasinski & Zutell, 2010). Each of the first three lessons begins with a reading selection that reinforces the **theme** and grounds vocabulary study in the context of meaningful reading. In addition, each lesson directly and explicitly builds skills and strategies for discovering word meanings.

In Lesson 1, a specific **context clues strategy** is explained and modeled, and a procedure for applying it is reviewed. For example, students might be directed to look for information about a setting or location as a clue. Students apply that context clues strategy, as well as others they have learned, to predict word meanings. Then they check those predictions against the student-friendly explanations (Beck, McKeown, & Kucan, 2013) in the *Word Wisdom* dictionary and the context to determine the appropriate meanings for the words under study.

Lessons 2 and 3 also emphasize word-learning strategies. Lesson 2 is built around Latin and/or Greek roots directly connected to the theme of the unit. For example, a unit on communication might include a root for speaking (e.g., *loq* as in *elocution*), one for listening (e.g., *audi* as in *audible*), and one for calling (e.g., *voc* as in *convocation*). The emphasis on word structure in Lesson 2 helps students strengthen their ability to use **root word** or **morphological elements** to understand the meaning of unfamiliar words in their schoolwork and other reading.

Lesson 3 provides instruction and practice with theme words and topics using a variety of **reference sources,** including dictionaries,

thesauruses, and online sources. Students are instructed not only in how to locate particular items but also in how to choose definitions and examine **word relationships** (synonyms, antonyms, parts of speech) appropriate to the context. Thus, in the course of a unit students learn about, actively use, and integrate the primary means of discovering word meanings: multiple encounters and word-learning strategies. The process is reinforced throughout the unit with specific activities in each lesson that explicitly ask students to use these methods together.

Each unit in *Word Wisdom* also includes a **review lesson** that provides **additional exposure** to vocabulary words. It provides students with the opportunity to work with all 30 of the words taught in the unit in a single lesson, thus reinforcing the relationships among the words and their connection to the unit's theme to maximize word learning. Additionally, specific activities are structured to give students practice in answering **assessment practice** questions so that their performance on such tests more accurately reflects the depth and breadth of their vocabulary knowledge. The Teacher's Guide also includes many practical ideas and activities that provide further engagement with the words being studied to broaden and deepen student understanding. Regularly using the Additional Activities, which include writing activities and mini-lessons for extension or reinforcement of lesson concepts, can ensure that students apply word meanings and connect them to their other studies and personal experiences. This integration across time, places, and subjects motivates students to become active word learners and is a powerful tool to enhance achievement across academic areas.

The *Word Wisdom* eResources Center includes additional activities for practice, reinforcement,

and enrichment. By doing these activities for each unit, students consolidate and strengthen their understanding of the word meanings they have studied and more fully explore and organize those meanings in relation to words that have the same roots, are connected to the same theme, and have closely related but at times slightly different meanings. The following activities often challenge students to go beyond the unit words, building connections to and experiences with a richer vocabulary:

- **Word cards** can be used in a variety of ways to practice associating words with specific meanings. They can also be used to play word games or sort words into categories that aid students in understanding relationships between words and concepts.

- **Root cards** can be used with known prefixes and suffixes to strengthen students' understanding of word structure and its connection to meaning.

- **Semantic mapping (graphic organizers)** supports students in organizing the concepts and relationships important to a given theme, at times adding words and categories that fill out the "big picture" and locating the words studied in that domain of knowledge.

- **Word ladders** encourage students to consider the range of meanings conveyed by a group of words that may extend from synonyms to antonyms, the place of studied words in that range, and the value of word choice to convey specific shades of meaning in the appropriate context.

Each of the resources in the *Word Wisdom* eResources Center helps teachers deliver research-based, practical, effective vocabulary instruction to support their students' reading comprehension.

Conclusion

While it is clear that students learn a considerable number of words indirectly from their own reading, it is also clear that vocabulary development should be a major focus of instruction from the earliest grades to insure that students recognize the importance of learning word meanings and to provide them with the skills for discovering those meanings in the course of their own reading. Recent research and national reviews of research strongly emphasize the critical contribution of vocabulary knowledge to proficient, fluent reading and reading comprehension. Yet until now, systematic, research-based vocabulary instruction has appeared to be the exception rather than the rule in elementary and middle-grade classrooms. With the advent of new language standards that emphasize explicit vocabulary development in English language arts (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010), school systems will be able to examine more closely their instructional practices for word learning. School districts and teachers need comprehensive, organized resources available to support teachers in delivering such instruction. *Word Wisdom* has been specifically designed to address this need.

References

Anderson, R. C., & Nagy, W. E. (1992). The vocabulary conundrum. *American Educator,* Winter, 14–18, 44–47.

Armbruster, B., Lehr, F., & Osborn, J. (2001). *Put reading first: The research building blocks for teaching children to read!* Jessup, MD: National Institute for Literacy.

Baumann, J. F., Blachowicz, C. L. Z., Manyak, P. C., Graves, M. F., & Olejnik, S. (2009–2012). *Development of a multi-faceted, comprehensive, vocabulary instructional program for the upper-elementary grades.* [R305A090163]. U.S. Department of Education, Institute of Education Sciences, National Center for Education Research (Reading and Writing Program).

Beck, I. L., McKeown, M. G., & Kucan, L. (2013). *Bringing words to life: Robust vocabulary instruction* (2nd ed.). New York, NY: Guilford.

Biemiller, A. (2001). Teaching vocabulary: Early, direct, and sequential. *American Educator,* 25(1), 24–28, 47.

Biemiller, A. (2009). *Words worth teaching: Closing the vocabulary gap.* Columbus, OH: SRA/McGraw-Hill.

Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology,* 98(1), 44–62.

Blachowicz, C., & Fisher, P. (2014). *Teaching vocabulary in all classrooms* (5th ed.). New York, NY: Pearson.

Bowers, P. N., & Kirby, J. R. (2010). Effects of morphological instruction on vocabulary acquisition. *Reading and Writing,* 23, 515–537.

Chall, J. S., & Jacobs, V. A. (2003). The classic study on poor children's fourth-grade slump. *American Educator,* 27(1), 14–15, 44.

Graves, M. F., Baumann, J. F., Blachowicz, C. L. Z., Manyak, P., Bates, A., Cieply, C., Davis, J. R., & Von Gunten, H. (2014). Words, words, everywhere, but which ones do we teach? *The Reading Teacher,* 67(5), 333–346. doi:10.1002/trtr.1228

Hart, B., & Risley, T. R., (1995). *Meaningful differences in the everyday experience of young American children.* Baltimore, MD: Paul H. Brookes Publishing Company.

Hiebert, E. H. (2005). In pursuit of an effective, efficient vocabulary program. In E.H. Hiebert & M. Kamil (Eds.), *Teaching and learning vocabulary: Bringing research to practice* (pp. 243–263). Mahwah, NJ: Erlbaum.

Hiebert, E. H., & Cervetti, G. N. (2012). What differences in narrative and informational texts mean for the learning and instruction of vocabulary. In E. B. Kame'enui & J. F. Baumann (Eds.), *Vocabulary instruction: Research to practice* (2nd ed., pp. 322– 344). New York, NY: Guilford.

Hirsch, E. D., Jr. (2003). Reading comprehension requires knowledge—of words and the world: Scientific insights into the fourth-grade slump and the nation's stagnant comprehension scores. *American Educator,* 27(1), 10–22.

Marzano, R. J. (2004). *Building background knowledge for academic achievement.* Alexandria, VA: Association for Supervision and Curriculum Development.

McKeown, M. G., Beck, I. L., Omanson, R. C., & Pople, M. T. (1985). Some effects of the nature and frequency of vocabulary instruction on the knowledge and use of words. *Reading Research Quarterly,* 20(5), 522-535.

National Assessment Governing Board (NAGB). (2010). *Reading Framework for the 2011 National Assessment of Educational Progress.* Washington, DC: U.S. Department of Education.

National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects.* Washington, DC: Authors.

National Institute of Child Health and Human Development (NICHHD). (2000). *Reports of the National Reading Panel: Teaching children to read: An evidenced-based assessment of the scientific research literature on reading and its implications for reading instruction. Reports of the subgroups.* NIH Publication No. 00-4754. Washington, DC: U.S. Government Printing Office.

Ouellette, G. P. (2006). What's reading got to do with it? The role of vocabulary in word reading and reading comprehension. *Journal of Educational Psychology,* 98(3), 554–566.

Oxford Dictionaries. (2010a). How many words are there in the English language? Retrieved from http://www.oxforddictionaries.com/words/how-many-words-are-there-in-the-english-language

Oxford Dictionaries. (2010b). Is it true that English has the most words of any language? Retrieved from http://www.oxforddictionaries.com/words/does-english-have-most-words

Penno, J. F., Wilkinson, I. A. G., & Moore, D. W. (2002). Vocabulary acquisition from teacher explanation and repeated listening to stories: Do they overcome the Matthew effect? *Journal of Educational Psychology,* 94, 23–33.

Rasinski, T., & Zutell, J. (2010). *Essential strategies for word study: Effective methods for improving decoding, spelling, and vocabulary.* New York, NY: Scholastic.

Silverman, R. D., Proctor, C. P., Harring, J. R., Doyle, B., Mitchell, M. A., & Meyer, A. G. (2014). Teachers' instruction and students' vocabulary and comprehension: An exploratory study with English monolingual and Spanish–English bilingual students in grades 3–5. *Reading Research Quarterly,* 49(1), 31–60. doi:10.1002/rrq.63

Stahl, S. A., & Nagy, W. (2006). *Teaching word meanings.* Mahwah, NJ: Erlbaum.

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