

G r e a t S o u r c e

Vocabulary for Achievement

Research Base

Introduction

The words students know and the strategies they have available to learn new words are critical to success in school and in life. The *Vocabulary for Achievement* series, grades three through twelve, is a carefully crafted set of worktexts providing direct instruction on this crucial topic. In addition to teaching word meanings directly, the program gives strategies to help students become independent word learners. *Vocabulary for Achievement* is designed to be consistent with the best-informed, most recent research.

The importance of meaning vocabulary

Vocabulary for Achievement teaches a topic of great importance. One of the most enduring findings in educational research is that meaning vocabulary is closely associated with educational achievement (National Reading Panel, 2000). An extensive number of empirical studies supporting the importance of vocabulary have been collected using large numbers of students of varying ages. In a comprehensive review of the research, Daneman (1991, pp. 524-5) stated "...vocabulary knowledge is one of the best single predictors of reading comprehension." Thus, the development of a large and varied vocabulary is a critical educational task.

Direct and indirect instruction in meaning vocabulary

Vocabulary for Achievement provides direct instruction in word meanings. This type of instruction has been shown to be a valuable way of increasing vocabulary learning. Analysis of the research literature suggests that vocabulary is best learned by a combination of direct and indirect instruction (National Reading Panel, 2000). In direct instruction, words are explicitly taught to students. It has been demonstrated that the direct and intensive instruction of words positively affects vocabulary (Beck & McKeown, 1991; Mezynski, 1983; Stahl & Fairbanks, 1986). Studying words through the direct instruction provided in *Vocabulary for Achievement* significantly amplifies a student's knowledge base of word meanings. This is because the series uses well-crafted lessons to teach carefully chosen words.

In addition, students learn much vocabulary through reading (National Reading Panel, 2000; Sternberg, 1987). This type of vocabulary increase is due to incidental, or indirect instruction. As students read widely, they both acquire new word meanings and deepen the meanings of words that are only partially known (Nagy & Scott, 2000). The instruction in *Vocabulary for Achievement* provides opportunities to extend word meaning through reading in several ways. First, each lesson introducing words contains a reading passage that uses all of the new words in a passage. Reading these words in context helps students to achieve greater control over meanings and gain the nuances of usage only available when a word is placed in connected reading. To provide reading

in different genres, the passages in *Vocabulary for Achievement* cover a balanced range of topics from literature, the arts, social sciences, and science/technology. Next, these passages are supplemented by contextual reading within the review and skills component of the worktexts. For grades three through five, students complete fill in the blank exercises of passage length using words they have studied. As befits the higher levels, grades six through twelve worktexts present longer passages in skills lessons that help students prepare for standardized tests programs such as the ACT, SAT, and state tests.

Second, the *Vocabulary for Achievement* program helps students to be better learners from incidental, or indirect, instruction. Some researchers estimate that students learn approximately three thousand new vocabulary words per year (Nagy & Anderson, 1984). If this is true, it is not feasible to learn this entire number using only direct instruction (National Reading Panel, 2000). However, the *Vocabulary for Achievement* program facilitates learning additional words. How does it do this? To begin with, the program directly teaches several hundred *useful* words that students are likely to find in their school texts, novels, and other sources of wide reading. Studying such words through direct instruction significantly amplifies a student's knowledge in the critical area of meaning vocabulary (Beck & McGeown, 1991).

It should be noted that vocabulary size has not been firmly established by research. Other investigators (Goulden, Nation, & Read, 1990; D'Anna, Zechmeister, & Hall, 1991) have, more recently, collected evidence that vocabulary growth involves far fewer words than previously thought, and that it is feasible to teach a substantial proportion of functionally important words through direct instruction. If these more recent estimates are correct, programs such as *Vocabulary for Achievement* are of paramount importance to a student's educational achievement.

The selection of word lists

The *Vocabulary for Achievement* word lists are carefully constructed from empirical studies of word frequency (Carroll, Davies, & Richman, 1971; Dale & O'Rourke, 1981; Harris & Jacobson, 1982; Kucera & Francis, 1967; Thorndike & Lorge, 1944; Zeno et al, 1995), a variable highly correlated with word difficulty. In addition to overall frequency, words were checked for frequency at the grade levels at which they were taught (Zeno et al, 1995). These precautions ensure that students will meet the words that are taught in many different contexts, as is suggested for effective vocabulary instruction (National Reading Panel, 2000). In grades 6-12 the word lists contain over 80 percent of a well-accepted list of SAT words. Most of the SAT words are taught in the Fourth Course or earlier, providing students with ample time to master them before encountering them on the SAT. Finally, the words taught in *Vocabulary for Achievement* are designed to cover a range of subject areas. Thus, students are supported in knowledge of words that appear frequently in their reading. This support makes

them more comfortable as readers, and, hence, encourages them to read more. The learning of even more new words is facilitated as students read more widely.

The systematic teachings of strategies

Vocabulary for Achievement also facilitates broad vocabulary learning through the systematic teaching of strategies. Research shows that students who master strategies have powerful ways of learning words independently (Baumann et al, 2002). Experts find that the teaching of morphology (the study of word structure), context (the ability to infer word meaning from the meaning of surrounding text), and dictionary skills are critical to strategic learning of vocabulary (Baumann, Kame'enui, & Ash, 2003; Nagy & Scott, 2000; Graves, 2000; Graves & Watts-Taffe, 2002). *Vocabulary for Achievement* teaches each of these systematically. In addition, levels three through five teach important ways of manipulating and relating word relationships, and some test preparation; levels six through twelve teach systematic reasoning through analogies and test preparation. A further description of the strategies employed to help students master words independently is given in the section entitled "Strategies for independent vocabulary learning."

Effective direct instruction in words

Not all direct instruction is effective. Indeed, several studies show that much instruction in vocabulary is cursory, and would be expected to result in little learning. In contrast, the instruction provided in *Vocabulary for Achievement* has been carefully guided by research to provide optimal learning, while keeping within reasonable task limitations. Several researchers have given guidelines for direct instruction. Kolich (1991) and Stahl (1983) have determined that word learning is enhanced if definitions of words are combined with contextual information. Scott and Nagy (1997) found that the inclusion of sample sentences in the introduction of words is effective in fostering word learning. *Vocabulary for Achievement* includes all these sources of information for each word. Each word is introduced with a definition, followed by a sample sentence, and included in a reading passage. Such multiple and repeated sources of information about words foster effective vocabulary learning (Blachowicz & Fisher, 2000; National Reading Panel, 2000).

At least two studies (Beck, Perfetti, & McKeown, 1982; Durso & Coggins, 1991) suggest that words are more effectively taught if they are grouped around a central concept than if haphazardly grouped. As suggested by this research, all lessons in *Vocabulary for Achievement* are grouped around central themes. Although other evidence indicates that semantic grouping by itself is not an important factor (Stahl, Burdge, Machuga, & 1992), these themes help students to connect words, thereby fostering higher-level thinking and facilitating the learning process. At times the themes used are meaning based (e.g., words for ignoring and paying

attention), at other times the themes are strategy based (e.g., antonyms, the root *-scribe*). Themes that are meaning based foster the making of connections among words, while strategy-based themes help to facilitate the metacognition (thinking about thinking) that enables students to master independent learning strategies.

Research also shows that, to be effectively learned, students must have several opportunities to meet and respond to words. While the research has not fully determined the optimal number of such opportunities (Nagy & Scott, 2000), Beck and McKeown (1991) find that significant word learning can take place with four meaningful opportunities to meet a word. The *Vocabulary for Achievement* program contains at least six encounters of every word that is taught. In grades three through five, these opportunities are further supplemented with a review lesson after each three lessons introducing words. Grades six through twelve include flash cards, bonus activities, and games that can be used for review.

Research has also shown that the more active the student's encounters with words are, the more learning will take place (Beck & McKeown, 1991; Blachowicz & Fisher, 2000; Stahl & Fairbanks, 1986) *Vocabulary for Achievement* provides multiple opportunities for students to act on the words. For grades six to twelve, students must *write* the word several times. In addition, they must judge correct usage, change forms of words, and answer reading comprehension exercises. Finally, each lesson contains a writing assignment requiring words to be synthesized into an essay, allowing students to personalize words, as suggested by Blachowicz and Fisher (2000). The three through five levels include extended answers to reading, classifying words, the creative completion of sentences, and using multiple words in sentences. Such higher-level thinking and activity-based exercises are found by Beck and McKeown, (1991) to increase the effectiveness of in-depth word learning during direct instruction.

Finally, innovative research-based definitions have been incorporated into *Vocabulary for Achievement*. Research has shown that children have great difficulty deriving meaning from dictionary definitions (Miller & Gildea, 1987; Scott & Nagy, 1997). In response to this finding, Nist and Olejnik (1995) collected experimental evidence showing that definitions incorporated into sentences were more comprehensible. The definitions presented in *Vocabulary for Achievement* follow this innovative format and, hence, are more comprehensible to children.

Strategies for independent vocabulary learning

Strategies for enabling students to learn words independently are critical to any vocabulary program. *Vocabulary for Achievement* systematically provides the instruction that enables students to use the program as a springboard for independent vocabulary learning. Three strategies are considered the

cornerstone for vocabulary learning: the ability to use context to derive the meaning of unknown words, the ability to use morphology (or word structure) to figure out words, and the ability to interpret dictionary information (Baumann, Kame'enui, & Ash, 2003; National Reading Panel, 2000). Other strategies, such as metacognitive word knowledge and manipulation, and skills related to test taking, complete the *Vocabulary for Achievement* program.

Context

The *Vocabulary for Achievement* program provides instruction and practice in the essential skill of using context. That is, students systematically learn and practice the strategies involved in deriving the meanings of unknown words based upon the sense of the surrounding text. Research shows that students learn new word meanings from context, but often need preexposure to words or many exposures before they are able to establish meaning from context (Jenkins, Stein, Wysocki, 1984; Sternberg, 1987). To aid in this process, students profit from instruction on how to use context effectively. Meta-analyses (combined analyses of many studies) that show this are provided by Fukkink & de Glopper (1998) and Kuhn & Stahl (1998). Fukkink and de Glopper also conclude that this instruction can be made even more effective if students are given instruction in using different and specific types of context clues. *Vocabulary for Achievement* provides consistent and well-crafted instruction in using context clues. In grades three through five, students learn the process of using these clues. In grades six through twelve, students are introduced to more specific types of context clues. Grades eleven through twelve provide students with the opportunity to apply using context in difficult texts from varied content areas. The context strategies taught and practiced in *Vocabulary for Achievement* give students a base to learn new words from the reading they do independently.

Two types of morphology

Morphology is a second important strategy for learning words. In morphology, students use prefixes, roots (or stems), and suffixes within words to derive the meanings of unknown words. Two types of morphology may be distinguished, and both contribute to independent word learning. The first is the learning of word elements based largely upon ancient Greek and Latin word elements. These word elements include, for example, the *in* in the word *inedible* and the *script* in the word *manuscript*. Research in the field of vocabulary shows that, in general, learning the meanings of these word elements, and how to apply them to derive the meaning of new words is profitable as word study (Baumann et al, 2002; Graves & Hammond, 1980; Otterman, 1955; Thompson, 1958; White, Sowell, & Yanagihara, 1989; Wysocki & Jenkins, 1987), and that such morphological awareness is correlated with reading achievement into the high school years. (Nagy, Diakidoy, & Anderson, 1993).

Vocabulary for Achievement teaches such elements throughout the program, using word elements appropriate to different grade levels. In addition, the program gives specific instruction and practice in the using this type of morphology, and combining it with context and dictionary clues. This is supported by research that has shown that context and morphology study can be effectively combined (Baumann et al, 2002) and that, since context clues are only partial, students may also need to rely on other sources of information, such as the dictionary (Schatz & Baldwin, 1986).

A second type of morphological analysis is the recognition of derived word families, such as nation, national, nationalize. Like these three examples, most of these are derivational suffixes, that change words from one part of speech to another. If students understand that these words are related, and are often simply different parts of speech applied to the same root, they have a powerful tool for learning new words. Research has emphasized the extreme importance of teaching these elements. In fact, Nagy and Anderson (1984) estimate that over 60% of new words learned by students are related to known words in this way. In keeping with the critical importance of this type of morphological analysis, *Vocabulary for Achievement* provides direct instruction in these types of word family elements for all grade levels. In addition, from grades six through twelve, derivatives are given for each word introduced in every lesson. Finally, and perhaps most importantly, each lesson from grades six through twelve includes a specific “write the derivative” exercise in which the student must change a word from one form to another to fit appropriately in a sentence. The fact that students must actually *write* out the changed form is valuable, for it helps students to understand and practice spelling regularities across derivatives (Cunningham, 1998).

Dictionary and reference use

A third type of strategy instruction is the use of the dictionary. Research has shown that students have great difficulty deriving meaning from definitions (Miller & Gildea, 1987). Scott and Nagy (1997) have shown that much of the problem with definitions was due to their unfamiliar structure. Yet, since other sources of information may be only partial, it is important to know how to use this difficult tool independently (Schatz & Baldwin, 1986). To facilitate the use of this important tool, *Vocabulary for Achievement* provides extensive instruction at all levels, three through twelve. Children are specifically taught how dictionary definitions are structured, and, to facilitate transfer, actual dictionary definitions are used. In addition, such topics as reading entries, multiple definitions, and fitting the definition to the context, etymologies, and geographical entries are provided. In addition, the use of the thesaurus is addressed.

Word awareness, word relationships, and word manipulation

In seminal reviews of word knowledge and learning, Nagy and Scott (2000), Nation (1990), and Laufer (1998) have outlined an extensive number of dimensions of word knowledge which require awareness of how words function and contrast. These require metacognition, or the ability to think consciously about words. This type of word awareness enables students to use words more adeptly. Such topics include the knowledge of parts of speech, the knowledge of nonliteral meanings (idiom and metaphor), the knowledge that words may be contrasted through synonyms and antonyms, and the knowledge that words may carry multiple meanings. These types of word awareness activities are included in *Vocabulary for Achievement*.

Individual differences

There has been some attention to individual differences in vocabulary learning. Differences between middle class and disadvantaged children appear by the age of three (Hart & Risley, 1995), are demonstrably present at first grade (White, Graves, & Slater, 1990), and persist thereafter. The data of White, Graves, and Slater suggests that disadvantaged students know only about 50-70% of the words known by middle-class students (Baumann, Kame'enui, & Ash, 2003). In a review of the literature, Stanovich (1986) concludes that since the acquisition of vocabulary is critical to academic success, and since much vocabulary is acquired through reading, the fact that at-risk students read less than other students means that they acquire less meaning vocabulary. Hence, these disadvantaged students become more and more behind their peers with each passing year.

Similarly, the acquisition of meaning vocabulary is critical to success in nonnative languages. All of these conclusions point to the fact that disadvantaged, at-risk, and English language learner students experience less incidental learning (Blachowicz & Fisher, 2000) and therefore need more direct instruction. Research has verified that students who are at-risk do profit from vocabulary instruction (Baumann et al, 2002).

For all these reasons, direct instruction in meaning vocabulary assumes great importance in their school instruction. This makes a program such as *Vocabulary for Achievement* an excellent resource for helping such students. It should also be noted that, because of the sensitivity of young children to the level of instruction, *Vocabulary for Achievement*, grades 3-5 has two levels of instruction. In each lesson that teaches words, eight core words and two enrichment words are presented. This provides teachers an easily accessible way providing for individual differences.

References

- Baumann, J.F., Edwards, E.C., Font, G., Tereshinski, C.A., Kame'enui, E.J., & Olejnik, S. (2002). Teaching morphemic and contextual analysis to fifth-grade students. *Reading Research Quarterly*, 37, 150-176.
- Baumann, J.F., Kame'enui, E.J., & Ash, G.E. (2003). Research on vocabulary instruction: Voltaire redux. In J. Flood, D. Lapp, J.R. Squire, & J.M. Jensen (Eds.) *Handbook of Research on the Teaching of the English Language Arts*, (2nd ed., pp. 752-785) Mahwah, NJ: Lawrence Erlbaum Associates.
- Beck, I.L., & McKeown, M.G. (1991). Conditions of vocabulary acquisition. In R. Barr, M.L. Kamil, P. Mosenthal, & P.D. Pearson (Eds.), *Handbook of reading research* (Vol. II., pp. 789-814). White Plains, NY: Longman.
- Blachowicz, C.L.Z., & Fisher, P. (2000). Vocabulary instruction. In M.L. Kamil, P. Mosenthal, P.D. Pearson, & R. Barr (Eds.). *Handbook of reading research* (Vol. III, pp. 503-523). Mahwah, NJ: Lawrence Erlbaum Associates.
- Beck, I.L., Perfetti, C.A., & McKeown, M.G. (1982). The effects of long-term vocabulary instruction on lexical access and reading comprehension. *Journal of Educational Psychology*, 74, 506-521.
- Blachowicz, C.L.Z., & Fisher, P. (2000). Vocabulary instruction. In M.L. Kamil, P. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. III, pp. 503-523). Mahwah, NJ: Lawrence Erlbaum Associates.
- Carroll, J.B., Davies, P., & Richman B. (1971). *The American heritage word frequency book*. Boston: Houghton Mifflin Co.
- Cunningham, P.M. (1998) The multisyllabic word dilemma: Helping students build meaning, spell, and read “big” words. *Reading and Writing Quarterly*, 14, 189-219.
- Dale, E., & O'Rourke, J. (1981). *The living word vocabulary*. Chicago: World Book/Childcraft International.
- D'Anna, C.A., Zechmaster, E.B., & Hall, J.W. (1991). Toward a meaningful definition of vocabulary size. *Journal of Reading Behavior*. 23, 109-122.
- Daneman, M. (1991). Individual differences in reading skills. In R. Barr, M.L. Kamil, P. Mosenthal, & P.D. Pearson (Eds.), *Handbook of reading research* (Vol. II, pp. 512-538). White Plains, NY: Longman.
- Durso, F.T., & Coggins, K.A.(1991). Organized instruction for the improvement of word knowledge skills. *Journal of Educational Psychology*, 83, 108-112.
- Fukink, R.G., & de Glopper, K. (1998). Effects of instruction in deriving word meaning from context: A meta-analysis. *Review of Educational Research*, 68, 450-469.
- Goulden, R., Nation, P., & Read, J. (1990). How large can a receptive vocabulary be? *Applied Linguistics*, 11, 341-363.
- Graves, M. (2000). A vocabulary program to complement and bolster a middle-grade comprehension program. In B. M. Taylor, M.F. Graves, & P. Van Den Broek (Eds). *Reading for Meaning*. (pp. 116-135). NY: Teachers College Press.
- Graves, M.F., & Hammond, H.K. (1980). A validated procedure for teaching prefixes and its effect on students' ability to assign meaning to novel words. In M.L. Kamil & A.J. Moe (Eds.). *Perspectives on reading research and instruction*. 29th yearbook of the National Reading Conference (pp. 184-188). Washington, D.C.: National Reading Conference.
- Graves, M.F., & Watts-Taffe, S.M. (2002). The place of word consciousness in a research-based vocabulary program. In A.E. Farstrip, & S. J. Samuels (Eds.), *What research has to say about reading instruction* (pp. 140-165). Newark, Delaware: International Reading Association.
- Hart, B., & Risley, T.R. (1995) *Meaningful difference in the everyday experiences of young American children*. Baltimore: Paul H. Brookes.

- Harris A.J., & Jacobson, M.D. (1982). *Basic reading vocabularies*. NY: Macmillan.
- Jenkins, J.R., Stein, M., & Wysocki, K. (1984). Learning vocabulary through reading. *American Educational Research Journal*, 21, 767-787.
- Kolich, E.M. (1991). Effects of computer-assisted vocabulary training on word knowledge. *Journal of Research and Development in Education*, 23, 177-182.
- Kucera, H., & Francis, W.N. (1967). *Computational analysis of present day American English*. Providence, RI: Brown University Press.
- Kuhn, M.R., & Stahl, S.A.(1998). Teaching children to learn word meanings from context: A synthesis and some questions. *Journal of Literacy Research*, 30, 119-138.
- Laufer, B. (1998). What's in a word that makes it hard or easy: Some intralexical factors that affect the learning of words. In N. Schmitt, & M. McCarthy (Eds.), *Vocabulary: Description, acquisition and pedagogy* (pp. 140-155). Cambridge: Cambridge University Press.
- Mezynski, K. (1983). Issues concerning the acquisition of knowledge: Effects of vocabulary training and reading comprehension. *Review of Educational Research*, 53, 263-279.
- Miller, G., & Gildea, P. (1987). How children learn words. *Scientific American*, 257, 94-99.
- Moore, J.C. (1971). Test wiseness and analogy test performance. *Measurement and Evaluation in Guidance*, 4, 198-202.
- Nagy, W., & Anderson, R.C. (1984). How many words are there in printed school English? *Reading Research Quarterly*, 19, 304-330.
- Nagy, W.E., Diakidoy, I.N., & Anderson, R.C. (1993). The acquisition of morphology: Learning the contribution of suffixes to the meaning of derivatives. *Journal of Reading Behavior*, 25, 155-170.
- Nagy, W.E., & Scott, J.A. (2000). Vocabulary Processes. In M.L. Kamil, P. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. III, pp. 269-284). Mahwah, NJ: Earlbaum.
- Nagy, W., & Anderson, R.C. (1984). How many words are there in printed school English? *Reading Research Quarterly*, 19, 304-330.
- National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, D.C.: National Institute of Child Health and Human Development.
- Nation, I.S.P. (1990). *Teaching and learning vocabulary*. NY: Newbury House.
- Nist, S., & Olejnik, S. (1995). The role of context and dictionary definitions on varying levels of word knowledge. *Reading Research Quarterly*, 30, 172-193.
- Otterman, L.M. (1955). The value of teaching prefixes and word-roots. *Journal of Educational Research*, 48, 611-616.
- Robinson, A., & Katzman, J. (1986). *Cracking the system: The SAT*. NY: Villard Books.
- Schatz, E.K., & Baldwin, R.S. (1986). Context clues are unreliable predictors of word meanings. *Reading Research Quarterly*, 21, 439-453.

- Scott J.A., & Nagy, W.E. (1997). Understanding the definitions of unfamiliar verbs. *Reading Research Quarterly*, 32, 184-200.
- Stahl, S.A. (1983). Differential word knowledge and reading comprehension. *Journal of Reading Behavior*, 15, 33-50.
- Stahl, S.A., Burdge, J.L., Machuga, M.B., & Stecyk, S. (1992). The effects of semantic grouping in learning word meanings. *Reading Psychology*, 23, 19-35.
- Stahl, S., & Fairbanks, M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research*, 56, 72-110.
- Stanovich, K.M. (1986). Effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360-406.
- Sternberg, R.B. (1987). Most vocabulary is learned from context. In M.G. McKeown & M.E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 89-105). Hillsdale, NJ: Erlbaum.
- Thompson, E. (1958). The “Master word” approach to vocabulary training. *Journal of Developmental Reading*, 2, 62-66.
- Thorndike, E.L., & Lorge, I. (1944). *The teacher’s word book of 30,000 words*. NY: Teachers College Press.
- White, T.G., Graves, M.F., & Slater, W.H. (1990). Development of recognition and reading vocabularies in diverse sociolinguistic and educational settings. *Journal of Educational Psychology*, 82, 281-290.
- White, T.G., Sowell, J., & Yanagihara, A. (1989). Morphological analysis: Implications for teaching and understanding vocabulary growth. *Reading Research Quarterly*, 24, 283-304.
- Wysocki, K., & Jenkins, J.R. (1987). Deriving word meanings through morphological generalization. *Reading Research Quarterly*, 22, 66-81.
- Zeno, S.M., Ivens, S.H., Millard, R.T., & Duvvuri, R. (1995) *Educator’s word frequency guide* (print and electronic editions). Brewster, NY: Touchtone Applied Science Associates.



ISBN 0-669-53127-8



6/05 053127