DOCUMENT RESUME

ED 453 515 CS 014 385

TITLE	Promoting Vocabulary Development: Components of Effective Vocabulary Instruction. 2000 Edition. Texas Reading Initiative.
INSTITUTION	Texas Education Agency, Austin.
REPORT NO	GE01-105-04
PUB DATE	2000-00-00
NOTE	56p.
AVAILABLE FROM	Publications Distribution Office, Texas Education Agency, P.O. Box 13817, Austin, TX 78711-3817.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Classroom Techniques; *Content Area Reading; Elementary Secondary Education; Instructional Effectiveness; *Learning Strategies; *Reading Skills; Student Needs; *Vocabulary Development; *Vocabulary Skills
IDENTIFIERS	Word Derivation; *Word Knowledge

ABSTRACT

In spite of its obvious importance to academic success, vocabulary development has received little instructional attention in recent years. But finding ways to increase students' vocabulary growth throughout the school years must become a major educational priority. The purpose of this booklet is to help educators and administrators make vocabulary development an important part of instruction. The booklet is divided into three parts. In the first part, the focus is on some of the obstacles that can make vocabulary development a difficult task. The second part provides an overview of the components of effective vocabulary instruction and discusses how these components can help students overcome the major obstacles to vocabulary growth. Part three describes some specific techniques that are especially useful in teaching word meanings as concepts, particularly in the content areas. As "vocabulary" is used in the booklet, the term refers to the reading vocabulary--the body of words students must know if they are to read increasingly demanding text with fluency and comprehension. The booklet does not address issues of decoding and of acquiring sight words--the focus is on how students acquire meanings and understandings of new words and concepts. (Includes 60 notes; contains 56 references.) (NKA)

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Promoting Vocabulary Development

Components of Effective Vocabulary Instruction

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Texas Reading Initiative

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Promoting Vocabulary Development

Components of Effective Vocabulary Instruction

2000 Edition

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Texas Reading Initiative

Reading is central to learning - in school, in the workplace, and in everyday life. How well children learn to read sets the foundation for their future success. The Texas Reading Initiative began in 1996 in response to Governor George W. Bush's challenge to all Texans to focus on the most basic of education goals - teaching all children to read. The goal the Governor set was clear - every child, each and every child, must learn to read.

The Texas Education Agency, in responding to the Governor's challenge, has worked on a multi-faceted effort aimed at providing information, resources, and knowledge to assist parents, educators, school board members, administrators, public officials, and business and community leaders as they seek to meet the Governor's goal. The Initiative has built on the years of demonstrated leadership and commitment of the Texas State Board of Education in the area of reading development and reading difficulties. The Initiative has relied on the convergence of reading research from the past several decades that illuminates the way children learn to read and how to enhance the reading process.

In 1997, the Agency first published the document, *Beginning Reading Instruction, Components and Features of a Research-Based Reading Program*, also known as the "red book." This booklet described important aspects of effective reading instruction, as well as elements of classroom and campus support for effective instruction.

Since its publication, over 200,000 copies of *Beginning Reading Instruction* have been printed and distributed. It has served as the basis for professional development opportunities, the development of curriculum standards and instructional materials, as well as the establishment of research-based reading programs in schools. The purpose of the booklet was to provide information that could be used to guide decisions as local school districts and educators worked toward Governor Bush's stated goal, "all

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students will read on grade level or higher by the end of the third grade and continue reading on or above grade level throughout their schooling."

After the initial distribution of *Beginning Reading Instruction*, several projects were undertaken to develop companion documents to the "red book." These first companion documents: *Spotlight on Reading, A Companion to Beginning Reading Instruction; Beginning Reading Instruction: Practical Ideas for Parents*; and *Instrucción Para Comenzar a Leer: Ideas Prácticas Para Padres de Familia.* These documents have been published and distributed over the past three years. In addition to these documents, the Agency, in collaboration with the Texas Center for Reading and Language Arts, has worked on additional booklets that provide information on reading topics such as vocabulary development, comprehension, and content area reading. These documents (published in 2000) and plans for future topic areas comprise what is now informally known as the "red book series." These booklets are meant to serve as resources to our schools and all stakeholders interested in meeting the Governor's goal.

This booklet, *Promoting Vocabulary Development*, would not be possible without the contributions of the consultants and staff of the Texas Center for Reading and Language Arts at the University of Texas at Austin and the staff of the Texas Education Agency. A special thanks goes to Dr. William Nagy, Professor of Education, Seattle Pacific University; Dr. Steve Stahl, Professor of Education, University of Georgia; Jean Osborn, Center for the Study of Reading, University of Illinois at Champaign-Urbana; and Fran Lehr.

Jim Nelson
Commissioner of Education

Promoting Vocabulary Development

Why a booklet about vocabulary development? Because words are the tools we use to access our background knowledge, express ideas, and learn about new concepts. Students' word knowledge is linked strongly to academic success.[1] Specifically, word knowledge is crucial to reading comprehension, and determines how well students will be able to comprehend the texts they read in the upper elementary grades, in middle and high school, and in college.[2]

Although it is true that comprehension is far more than recognizing words and remembering their meanings, it is also true that if a reader does not know the meanings of a sufficient proportion of the words in the text, comprehension is impossible.

Poor readers often lack adequate vocabulary to get meaning from what they read. Consequently, reading is difficult and tedious for them, and they are unable (and often unwilling) to do the large amount of reading they must do if they are to encounter unknown words often enough to learn them. This situation contributes to what are called "Matthew Effects," that is, interactions with the environment that exaggerate individual differences over time, with "rich get richer, poor get poorer" consequences. Good readers read more, become even better readers, and learn more words; poor readers read less, become poorer readers, and learn fewer words.[3] Indeed, the vocabulary problems of students who enter school with poor or limited vocabularies only worsen over time.[4]

Yet in spite of its obvious importance to academic success, vocabulary development has received little instructional attention in recent years. So to return to our question:

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[1] Baumann, J. F., & Kameenui, E. J. (1991). Research on vocabulary instruction: Ode to Voltaire. In J. Flood, D. Lapp, & J. R. Squire (Eds.), *Handbook of research on teaching the English language arts* (pp. 604–632). New York: Macmillan.

[2] Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. T. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 77-117). Newark, DE: International Reading Association.; Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind.* Cambridge, MA: Harvard University Press.

[3] Stahl, S. A. (1999). *Vocabulary development.* Cambridge, MA: Brookline Books; Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360–407.

[4] White, T. G., Graves, M. F., & Slater W. H. (1990). Growth of reading vocabulary in diverse elementary schools: Decoding and word meaning. *Journal of Educational Psychology, 82,* 281–290.

Why a booklet about vocabulary development? Simply because words are the very foundation of learning. Finding ways to increase students' vocabulary growth throughout the school years must become a major educational priority. The purpose of this booklet is to help you make vocabulary development an important part of instruction.

The booklet is divided into three parts. In the first part, we look at some of the obstacles that can make vocabulary development a difficult task. In the second part, we provide an overview of the components of effective vocabulary instruction and discuss how these components can help students overcome the major obstacles to vocabulary growth. In part three, we describe some specific techniques that are especially useful in teaching word meanings as concepts, particularly in the content areas.

First, however, we need to clarify what we mean by *vocabulary.* There are several types of vocabulary.[5] For example, our *listening* vocabulary is made up of all the words we hear and understand. Our *speaking* vocabulary includes all the words we use in everyday speech. Our *reading* vocabulary is made up of the words in print that we recognize or can figure out. As we use *vocabulary* in this booklet, the term refers to the reading vocabulary—the body of words students must know if they are to read increasingly demanding text with fluency and comprehension. We do *not* address issues of decoding and of acquiring sight words; our focus is on how students acquire meanings—and, more importantly, understandings—of new words and concepts. Those issues are, however, covered in the booklet, *Beginning Reading Instruction: Components and Feature of a Research-Based Reading Program.*

Some Obstacles to Vocabulary Development

Helping students to develop a strong reading vocabulary requires more than having them look up words in a dictionary. Rather, students need instruction that will help them acquire new word knowledge and develop strategies to enable them to increase the depth of that knowledge over time. To help students develop word knowledge in breadth and

[5] Irvin, J. L. (1997). *Reading and the middle school student* (2nd ed.). Boston: Allyn & Bacon.

depth, we must first recognize four fundamental obstacles, and then develop teaching practices to address those obstacles:

- *The size of the task.* The number of words that students need to learn is exceedingly large.
- *The differences between spoken English and written, or "literate" English.* The vocabulary of written English, particularly the "literate" English that students encounter in textbooks and other school materials, differs greatly from that of spoken, especially conversational, English. Students—both English language learners and those for whom English is the first language—may have limited exposure to literate English outside of school.
- *The limitations of sources of information about words.* The sources of information about words that are readily available to students—dictionaries, word parts, and context—pose their own problems. Each can be difficult to use, uninformative, or even misleading.
- *The complexity of word knowledge.* Knowing a word involves much more than knowing its dictionary definition, and simply memorizing a dictionary definition does not guarantee the ability to use a word in reading or writing. Adding to the complexity is the fact that different kinds of words place different demands on learners.

The Size of the Task

Although there is still debate over exactly how many and what words are essential for students to learn so as to become skillful readers, there is no question that skillful readers learn words by the thousands. There is also no doubt that without instructional intervention, the vocabulary gap between more and less skillful readers continues to widen over time.

We know that, on average, students add 2,000–3,000 words a year to their reading vocabularies.[6] This means that they learn from six to eight new words each day—an enor-

mous achievement. Individual differences in vocabulary size also involve large numbers. Some fifth-grade students may know thousands more words than other students in the same classroom. As a teacher, you know the difference this can make: students who know the meanings of many words catch on to and understand new ideas and concepts much faster than do those students with limited vocabularies.

Early in children's lives, differences in word knowledge levels begin to appear. This, in part, is due to the varying range of words children are exposed to within their homes and communities. Exposure to new words can differ dramatically among the children of families from different socioeconomic classes. It has been shown, for example, that young children of parents with jobs classified as "professional" can be exposed to 50 percent more words than are children of parents classified as "working class," and to twice as many words as children of parents who receive welfare support. [7] This finding does not mean that all, or even most children from low SES backgrounds are condemned to lives of linguistic poverty. Rather, it underscores the importance of finding ways to provide children with more activities that promote language development and vocabulary growth, beginning in the earliest days of school. Children whose homes have not prepared them for the variety of English necessary for educational success *can* learn to master this language through well-designed school experiences.[8]

The Differences Between Spoken English and Written English

Most spoken language, and especially the language of face-to-face conversation, is less rich and varied in vocabulary use than is written language. This is partly because speakers have a variety of communicative tools at their disposal—gestures, tone of voice,

[6] Anderson, R. C., & Nagy, W. E. (1992). The vocabulary conundrum. *American Educator, (16)*, 14–18, 44–46.; Anglin, J. M. (1993). Vocabulary development: A morphological analysis. *Monographs of the Society for Research in Child Development, 58* (Serial No. 238).; Beck, I. L., & McKeown, M. G. (1991). Conditions of vocabulary acquisition. In R. Barr, M. Kamil, P. Mosenthal, & P. D. Pearson (Eds.), ***Handbook of reading research*** (vol. 2, pp. 789–814). New York: Longman.; Nagy, W. E., & Herman, P. A. (1987). Breadth and depth of vocabulary knowledge: Implications for acquisition and instruction. In M. G. McKeown & M. E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 19–36). Hillsdale, NJ: Erlbaum.; White, Graves, & Slater, 1990.

[7] Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experiences of young American children: The everyday experience of one and two year old American children.* Baltimore, MD: Paul H. Brookes.

[8] For example, Snow, C. E., Barnes, W., Chandler, J., Goodman, I., & Hemphill, L. (1992). *Unfulfilled expectations: Home and school influences on literacy.* Cambridge, MA: Harvard University Press.

and facial expression—that are not available to writers. In addition, conversations between friends involve shared knowledge, which makes precise communication possible without precision in wording; "You know who" can identify the subject of a remark as precisely as a detailed physical description. In conversation, accuracy of communication depends more on feedback from listeners than on getting what is said exactly right.

In writing, and especially in literate writing, the primary communicative tool is precision in word choice. In fact, a conversation among college-educated adults contains, on average, less rich and varied vocabulary than does a typical children's book. The language of television is sometimes more varied than everyday conversation, but it seldom matches the level of language used in children's books.[9]

The differences between spoken and written English can pose major problems for students learning English, whose vocabulary difficulties sometimes can be disguised by their conversational fluency. For example, children of immigrant parents can become proficient in everyday conversation in less than two years. However, it may take a longer period of time for these children to become proficient in literate English.[10] If teachers are not aware of the difference in the time it takes to achieve conversational fluency and proficiency with written English, they might diagnose as learning or reading disabled a conversationally proficient English language learner who has trouble understanding textbooks.

Learning the vocabulary of literate English can be a problem as well for students for whom English is the first language. Words such as *renovate, restore, delve,* and *elude,* which might appear in a story from a fifth-grade textbook, are rarely encountered in everyday speech. We cannot assume that children will be familiar with all the words they encoun-

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[9] Cunningham, A. E., & Stanovich, K. E. (1998). What reading does for the mind. *American Educator, 22,* 8–15.; Hayes, D. P. (1988). Speaking and writing: Distinct patterns of word choice. *Journal of Memory and Language, 27,* 572–585.

[10] Collier, V. P. (1989). How long? A synthesis of research on academic achievement in a second language. *TESOL Quarterly, 23,* 509–631.

ter in school and in textbooks just because they come from English-speaking homes or just because they are proficient in conversational English.

Limitations of the Sources of Information About Words

Learning on their own or as part of a lesson, students have three main sources of information about words: dictionaries, word parts, and context. All of these are important, but each is also problematic.

Dictionaries. Although dictionary use is a main feature of most vocabulary instruction, many students do not receive the kind of instruction they need to learn how to use a dictionary effectively.[11] Traditional instruction in dictionary use focuses on having students look up words and use information from the definitions they find to write sentences. This kind of instruction appears to produce only a superficial understanding and rapid forgetting of a word. Young students often have difficulty interpreting the information in definitions, especially when it comes to how the word is used in a sentence. This is true even when the definitions have been rewritten to make them more user-friendly.[12] In fact, after examining the errors made by students who wrote sentences based on dictionary definitions of new words, the examiners concluded that this activity is "pedagogically useless."[13]

Young students also often have difficulty choosing the appropriate meanings from a dictionary entry for an unknown word. Dictionary definitions that might be accurate for adults are often too convoluted for children to understand, and the simplified definitions found in school dictionaries and glossaries often fail to adequately describe the word's meaning.

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[11] Miller, G., & Gildea, P. (1987). How children learn words. *Scientific American, 27*, 94–99.

[12] McKeown, M. G. (1993). Creating effective definitions for young word learners. *Reading Research Quarterly, 27*, 16–31.; Scott, J. A., & Nagy, W. E. (1997). Understanding the definitions of unfamiliar verbs. *Reading Research Quarterly, 32*, 184–200.

[13] Miller & Gildea, 1987.

Word parts. Students' ability to use word parts—prefixes, suffixes, and roots—to interpret new words can contribute greatly to their vocabulary growth.[14] Nevertheless, word parts are not a completely reliable source of information about word meanings. To illustrate, consider pairs of words such as the following, which share recognizable parts, but which are not clearly related in meaning: *casual/casualty, emerge/emergency, sign/resign, sign/design, awe/awful.*

Context. Students can acquire a great deal of vocabulary knowledge as they pick up the meanings of words from context as they read widely in appropriately challenging texts. However, the benefits of context are primarily long-term—a matter of gradually accumulating partial information about words as they are encountered repeatedly; the chance of learning the meaning of any particular word from one encounter with that word in context is rather slim.[15]

Finally, to use dictionary definitions, word parts, and context effectively requires awareness of words and flexible thinking—metacognitive and metalinguistic sophistication that many students do not possess. In fact, the students who are most in need of vocabulary growth are likely to be the ones least effective at using these sources of information.

The Complexity of Word Knowledge

What does it mean to *know* a word? Conventionally, when we talk about knowing a word, we mean knowing its definition. But knowing a word's definition is not the same thing as being able to use that word in speech and writing or to understand a text in which the word appears. People are able to use and to recognize in print words such as *at, the,* and *so,* but very few can give a formal definition for them[16]. Definitions are ways we talk about word meanings, but are different from word meanings.

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[14] Anglin, 1993.

[15] Nagy, W. E., Anderson, R. C., & Herman, P. A. (1987). Learning word meanings from context during normal reading. *American Educational Research Journal, 24,* 237–270.; Schatz, E. K., & Baldwin, R. S. (1986). Context clues are unreliable predictors of word meaning. *Reading Research Quarterly, 21,* 439-453.

[16] Nagy, W. E. (1988). *Vocabulary instruction and reading comprehension* (Tech. Rep. No. 431). Champaign, IL: Center for the Study of Reading.

In the conventional form of a definition, the definition first identifies the category to which a word belongs, and then describes how the word differs from other members of that category. A conventional definition of *fissure*, taken from a widely used dictionary, reads as follows: "a narrow opening [class] produced by cleavage [differentiation]."

The problem with conventional definitions is that they do not always help students to learn word meanings.[17] Indeed, the shortcomings of using such definitions to learn words can be seen in the sentences students write after they have read them. Given the following definition of *redress*: "set right; repair, remedy," one student wrote the following sentence: The *redress* for getting well [when] you're sick is to stay in bed."[18]

Subtle misunderstandings such as this one suggest that for many students, a word's "meaning" is not captured fully in a description of its logical relations to other words. To *know* a word, students need to encounter it in context and see how its meaning relates to the words around it, and how it relates to the other words that might have been used in its place. They need to understand that *worry* and *fret* are ways of showing concern, or that *galleon, schooner*, and *dinghy* are all types of boats. In addition, they need to understand how the meaning of words shift and change as they are used in different contexts. For example, look at changes in meaning for the word *gave*, as it appears in different contexts:[19]

John *gave* Frank five dollars.

John *gave* Mary a kiss.

The doctor *gave* the child an injection.

The orchestra *gave* a stunning performance.

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17 See, for example, Scott & Nagy, 1997.

18 Miller & Gildea, 1987.

19 Anderson, R. C., & Nagy, W. E. (1991). Word meaning. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (vol. 2, pp. 690–724). New York: Longman.

Although all of these examples involve an act of transmitting, with a giver, a recipient, and something given, each act differs greatly from the others. Students cannot learn this information from a dictionary definition alone. Instead, they need to see the word in many different contexts, to see how the word's meaning changes and shifts.

Adding to the complexity of word knowledge is the fact that all words are not the same. Vocabulary contains *function* words and *content* words. Function words are words that have a syntactic function, that are used to alert a reader or speaker to the structure of the sentence. The previous sentence without the words *are, that, a, to, or, the,* and *of* reads as follows: *Function words words have syntactic function, used cue reader speaker structure sentence.* Without function words the sentence is unintelligible.

Most speakers of English learn function words readily, in the first stages of language development. There are a relatively small number of such words, with approximately 100 accounting for almost 50 percent of the words used in written English.[20] However, the number of content words is virtually unlimited. Content words are the nouns, verbs, and adjectives that carry information in a text. Content words can be more or less concrete or abstract. Concrete words have a perceptible referent—for example, things, colors, sounds. Abstract words are more difficult to picture, feel, or hear. Not surprisingly, abstract words are more difficult to learn than are concrete words.[21] In vocabulary instruction, the meanings of concrete words can be tied to an object, or shown, whereas the meanings of abstract words have to be taught through examples and non-examples.

Other content words are infrequently used synonyms for words that are already known, such as *longevous* (long-lived), *abattoir* (slaughterhouse), and *paranomasia* (pun).

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[20] Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

[21] Paivio, A. (1963). Learning of adjective-noun paired associates as a function of adjective-noun word order and noun abstractness. *Canadian Journal of Psychology, 17,* 370-379.

These words may represent different shades of meaning from their synonyms, but knowing the meaning of the more frequent synonym usually gets a reader through a text containing the less frequent word. The reader learns the different shades of meaning though continued exposure.

More often than not, content words represent not just a new term, but a new concept, a new way of organizing ideas and experiences. For example, concepts such as *logarithm* or *photosynthesis* need to be learned in the context of other mathematical or biological concepts. We learn concepts through repeated encounters with them in a number of different contexts. Because learning word meanings as concepts is vital to vocabulary development—and content-area learning—we have made it the sole focus of part three of this booklet.

The Components of Effective Vocabulary Instruction

To be effective, a program of vocabulary instruction should provide students with opportunities for word learning by:

- encouraging wide reading;
- exposing students to high-quality oral language;
- promoting word consciousness;
- providing explicit instruction of specific words; and
- providing modeling and instruction in independent word-learning strategies.

In this part of the booklet, we discuss how each of these components contributes to helping students overcome the major obstacles to vocabulary growth. These components extend the vocabulary development ideas presented in the booklet, *Beginning Reading Instruction: Components and Features of a Research-Based Reading Program.*

What To Do About the Size of the Task: Wide Reading

We know that the volume of students' reading is strongly related to their vocabulary knowledge.[22] Students learn new words by encountering them in text, either through their own reading or by being read to. Increasing the opportunities for such encounters improves students' vocabulary knowledge, which, in turn, improves their ability to read more and more complex text. In short, the single most important thing you can do to improve students' vocabularies is to get them to read more.

Remember, to keep up, students need to learn at a rate of 2,000–3,000 words per year; to catch up, they need to exceed this rate. Can wide reading really be enough to help students learn so many words? Evidence indicates that it can. First, there is the evidence of those avid readers who acquire large vocabularies largely apart from any type of explicit

[22] Cunningham, A. E., & Stanovich, K. E. (1991). Tracking the unique effects of print exposure in children: Associations with vocabulary, general knowledge, and spelling. *Journal of Educational Psychology, 83*, 264-274.; Fielding, L. G., Wilson, P. T., & Anderson, R. C. (1986). A new focus on free reading: The role of trade books in reading instruction. In T. Raphael & R. E. Reynolds (Eds.), *The contexts of school-based literacy*. New York: Random House.

instruction in vocabulary. Second, there is a growing body of research showing that, although the odds of learning any particular word from context are small, the cumulative effects of learning from reading can be large. Consider the following argument for the effects of wide reading:[23]

- If, over a school year, a fifth-grade student reads for an hour each day, five days a week (in and out of school), at a conservative rate of 150 words per minute, the student will encounter 2,250,000 words in the course of reading.
- If 2 to 5 percent of the words the student encounters are unknown words, he or she will encounter from 45,000 to 112,500 such words.
- We know that students learn between 5 and 10 percent of previously unknown words from a single reading. This accounts for at least 2,250 new words the student learns from context each year.

The figure 2,250 new words learned a year is based on the lowest points of the estimated ranges. Even this conservative figure suggests that reading is a powerful influence on students' vocabulary growth.

What *kinds* of reading are necessary to produce such vocabulary growth? Whereas some argue that almost any reading ultimately will have powerful benefits for students,[24] others say that if students consistently select texts below their current reading levels, even wide reading will not result in measurable vocabulary growth.[25] Nor is reading text that is full of unfamiliar words likely to produce large gains in word knowledge.[26]

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[23] Herman, P. A., Anderson, R. C., Pearson, P. D., & Nagy, W. E. (1987). Incidental acquisition of word meanings from expositions with varied text features. *Reading Research Quarterly, 23,* 263–284.; Nagy, W. E., Anderson, R. C., & Herman, P. A. (1987). Learning word meanings from context during normal reading. *American Educational Research Journal, 24,* 237–270.; Nagy, W. E., Herman, P. A., & Anderson, R. C. (1985). Learning words from context. *Reading Research Quarterly, 20,* 233–253.

[24] Krashen, S. (1993). *The power of reading: Insights from the research.* Englewood, CO: Libraries Unlimited.

[25] Carver, R. P. (1994). Percentage of unknown vocabulary words in text as a function of the relative difficulty of the text: Implications for instruction. *Journal of Reading Behavior, 26,* 413-437.; Carver, R. P., & Leibert, R. E. (1995). The effect of reading library books at different levels of difficulty upon gain in reading ability. *Reading Research Quarterly, 30,* 26-48.

[26] Shefelbine, J. L. (1990). Student factors related to variability in learning word meanings from context. *Joumal of Reading Behavior, 22,* 71–97.

To help students get the most out of reading, you should encourage them to read at a variety of levels—some text simply for enjoyment, which should benefit their fluency if nothing else—and some text that challenges them. You should also help students develop reading strategies that will allow them to read more challenging texts with lower levels of frustration. When students have been taught comprehension strategies, they tend to do more reading.[27]

Increasing their motivation to read is another critical factor in helping students make the most of wide reading. One powerful motivating factor associated with more reading is a classroom environment that encourages and promotes social interactions related to reading.[28] Making available a variety of books and setting aside ample time for reading also motivate increased reading.

As is true for any method of promoting vocabulary growth, wide reading has some limitations. One is that it obviously cannot be effective with very young students who are not yet able to read very much on their own. Another limitation is that, although wide reading may be effective in producing general vocabulary growth, it is not an effective method for teaching the words that students need to master a particular selection or a concept related to a specific content area. Finally, it is important to acknowledge that, as important as it is, wide reading does not produce immediate, magic results; its effects are cumulative, and emerge over time.

You can encourage wide reading in a number of ways. You might, for example, recommend or provide lists of books for students to read outside of class, and make time in class for students to discuss what they have read. You can set aside a time each day for independent reading. And, of course, you can model the value you place on reading as they read, by telling students about the books you are reading.

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27 Guthrie J.T., Schafer, W.D., Wang, Y., & Afflerbach, P. (1995). Relationships of instruction to amount of reading: An exploration of social, cognitive and instructional connections. Reading Research Quarterly, 30, 8-25.

28 Guthrie, Schafer, Wang & Afflerbach, 1995.

What To Do About the Differences Between Spoken and Written English: High Quality Oral Language and Word Consciousness

High-quality oral language. As we discussed earlier, both English language learners and English-speaking students may achieve fluency in the language of face-to-face conversation and still have little exposure to or knowledge of the kind of language they encounter in school textbooks. Clearly these students need more exposure to written English, and wide reading is the most effective way of increasing exposure to this kind of language. But what can be done with students who are in the process of learning to read, and who cannot do a great deal of reading on their own? Here is one solution: Increase the quality of the oral language to which students are exposed—let them hear spoken English that incorporates more of the vocabulary and syntax typical of written, and particularly literate English.

A very effective way to expose children to literate vocabulary is to read to them from storybooks, especially when the reading is accompanied with discussion.[29] Authors of good children's literature have always found ways to talk "over children's heads"—using big words and other aspects of literate language—without decreasing children's interest or enjoyment. Both younger and older students appear to benefit from read-aloud activities, and older students can learn the meanings of new words as efficiently from hearing stories read to them as they can from reading the stories themselves.[30] Making available (either in the classroom or school library) a selection of quality audio books and players that students can use on their own can also be a good way to expose them to a variety of good books and broad language experiences.

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29 Dickinson, D.K., & Smith, M.W. (1944). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. *Reading Research Quarterly, 29*, 104-122.

30 Stahl, S.A., Richek, M.G., & Vandevier, R. (1991). Learning word meanings through listening: A sixth grade replication. In J. Zutell & S. McCormick (Eds.) *Learning factors/teacher factors: Issues in literacy research. Fortieth yearbook of the National Reading Conference* (pp. 185-192). Chicago National Reading Conference.

Storytelling is yet another way to increase the quality of students' oral language experiences. Even when no text is involved, storytelling still exposes students to richer language than does normal conversation. Pretend play likewise involves rich language use. The quality of preschool children's conversations, and teachers' use of a more sophisticated vocabulary also have been found to affect students' language and literacy development.[31]

Word consciousness. Asked what they could do to use more sophisticated vocabulary without intimidating or confusing their students, a group of teachers responded enthusiastically, "Make it fun!" We definitely agree. Playing with language is an essential component of language development. *Word consciousness* is the knowledge of and interest in words. Word-conscious students enjoy learning new words and engaging in word play. They know and use many words, and are aware of the subtleties of word meaning and of the power words can have.[32]

To become word conscious, students first need to develop a feel for how written language is different from everyday conversation. To this end, it is valuable to draw their attention to the distinctive characteristics of written language, even when reading aloud, and to help them learn to read like a writer, and to write with an audience in mind.

Having students copy in their journals phrases or sentences from their reading that are examples of especially effective language use—vivid descriptions, striking metaphors, interesting similes, plays on words—can help make language more alive for them. Students can share their examples with the class, or they can post them in the classroom to serve as inspiration or models for others.

Reading and discussing two versions of the same story—ideally, one with rich language and one with language that is less interesting—can promote word consciousness in younger students.

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31 Dickinson & Smith, 1994.

32 Graves, M.F., Juel, C., & Graves B.B. (1997). *Teaching reading in the twenty-first century.* Boston: Allyn & Bacon.

Word consciousness can be promoted in a way that helps students become aware of differences between Standard English and non-standard varieties, without stigmatizing the latter. Shirley Brice Heath describes classrooms in which students learned to be "language detectives," studying how people speak differently in different groups and in different situations. She believes that this awareness made an important contribution to the students' academic success.[33] It may be especially important to make such differences explicit for students less familiar with standard English.

A number of oral and written word games can serve to promote word consciousness, including puns, limericks, Hink-Pinks, crossword puzzles, jokes, riddles, and anagrams.[34] Encouraging students to play with words can create an interest in knowing more about them, and thus, can become a strategy for independent word learning.

What To Do About the Limitations of Sources of Information About Words: Independent Word-Learning Strategies

Independent word-learning strategies are techniques that teachers can model and teach to students so as to help them figure out the meanings of unknown words on their own. Because students learn most new words incidentally, through wide reading, helping students to acquire a set of word-learning strategies is important to their vocabulary development. Key word-learning strategies include (1) the efficient use of the dictionary; (2) the use of word parts (prefixes, suffixes, roots, compounds) to unlock a word's meaning; and (3) the use of context clues.

Dictionary use. Instruction in dictionary use that focuses on having students look up words and use information from their definitions to write sentences does not provide students with the guidance they need to make dictionary use an efficient independent word-learning strategy.

33 Brice Heath, S. (1983). A lot of talk about nothing. *Language Arts, 60*, 39-48.; Brice Heath, S. (1983). *Ways with words: Language, Life, and work in communities and classrooms.* New York: Cambridge University.

34 Stahl, 1999.

This is not to say, however, that dictionaries are not important aids to word learning. In fact, the more students are exposed to dictionary definitions, the better their word learning.[35] The crucial point here is that students receive instruction in *how* to use what they find in a dictionary entry so that they are able to translate the cryptic and conventionalized content of definitions into usable word knowledge.[36] This instruction includes modeling how to look up the meaning of an unknown word, thinking-aloud about the various definitions in an entry, and deciding which is the most appropriate definition for a particular context.[37]

Word parts. Teaching students how to use information about word parts can be very valuable in promoting vocabulary growth. Many students, however, are not aware of this strategy. Even students who have learned to break words into parts in their decoding instruction may not understand that they can use this knowledge to figure out word meanings. Teacher modeling helps to make the strategy's value clear to students.[38]

Using word-part information can be especially helpful in learning certain content-area concepts, as we will discuss in part three of this booklet.

Context clues. *Context clues* are clues to the meaning of a word contained in the text that surrounds it. These clues include definitions, examples, and restatements. Teaching students strategies for identifying and using context clues has been suggested as a major instructional technique for vocabulary development.[39]

A student learns a new word from context by making connections between the word and the text in which it appears. When a new word is first encountered, the student stores in memory some information about how it fits into what is being read. In subsequent encounters with the word, this information is reinforced, and more information about the

[35] 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,* 522–535.

[36] Scott & Nagy, 1997.

[37] Graves et al., 1997.

[38] Nagy, W. E., Winsor, P., Osborn, J. & O'Flahaven, J. (1994). Structural analysis: Some guidelines for instruction. In F. Lehr & J. Osborn (Eds.), *Reading, language, and literacy: Instruction for the twenty-first century* (pp. 45–58). Hillsdale, NJ: Erlbaum.

[39] Anderson & Nagy, 1991; Stemberg, R. J. (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.

word's role in particular contexts is added until the word is understood and used appropriately. As in teaching other kinds of strategies, teaching students to use context clues to develop vocabulary is an extended process that involves: modeling the strategy; providing explicit explanations of how, why, and when to use it; providing guided practice; gradually holding students accountable for independently using the strategy; and then providing intermittent reminders to apply it to reading across content areas.

As we noted earlier, learning words from context is a long-term process, one that involves multiple encounters with words. The challenge is to create vocabulary instruction that compresses this process to enable students to learn more words in a shorter period of time.[40]

What To Do About the Complexity of Word Knowledge: Explicit Instruction of Specific Words

Although students gain most of their word knowledge through wide reading, explicit instruction of specific words and their meanings also can contribute greatly to their vocabulary development. Explicit instruction is especially important for students whose exposure to the vocabulary of literate English is limited. To be most effective, explicit vocabulary instruction should be dynamic and involve a variety of techniques. Specifically, instruction should:

1. Use both definitional and contextual information about word meanings,
2. Involve students actively in word learning, and
3. Use discussion to teach the meanings of new words and to provide meaningful information about the words.

1. Use definitional and contextual information. In the past, vocabulary instruction most often consisted of learning lists of words and definitions (with a test on Friday). We

[40] Stahl, 1999.

now know that such instruction is of limited value, particularly in improving students' reading comprehension.[41] Students need to know how a word functions in various contexts. Therefore, instructional methods that provide students with both definitional and contextual information *do* improve comprehension, and do so significantly.

Some instructional activities that provide students with definitional information include:

- *Teach synonyms.* Often a synonym is all students need to understand a new word in context.
- *Teach antonyms.* Not all words have antonyms, but thinking about antonyms requires students to identify the crucial aspects of a word. For example, the word *chaos* implies an abyss, a void, or clutter, but its antonym, *order*, narrows the focus to the "clutter" part of the word's meaning.
- *Rewrite definitions.* As we noted earlier, dictionary definitions can often confuse or mislead students. Asking students to restate a dictionary definition in their own words can be more effective than requiring them to remember the exact wording of the definition.
- *Provide example sentences.* A good way to ascertain whether students understand a word's definitions is to have them provide example sentences in which they use the word. They may draw these examples from personal experiences ("Mom's kitchen is chaos.") or from textbooks ("After the great flood of 1937, there was chaos all over the Tennessee Valley.").
- *Provide non-examples.* Another way to find out if students truly understand the meaning of a new word is to have them supply words that are *not* examples of the word's meaning. For example, point out to them that *cry* is not an example of the word *guffaw,* then ask them to think of other non-examples of the word

[41] Stahl, S. A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research, 56*, 72-110.

(*bawl, sniffle, whine, whimper*). Coming up with non-examples requires students to think about the critical attributes of a word, much like providing antonyms.

- *Discuss the difference between the new word and related words.* A discussion of the word *debris*, defined as "trash," "garbage," or "waste," might include a discussion of the differences between *debris* and *trash, garbage*, and *waste*. For example, *debris* might be the result of some sort of accident or disaster, whereas *trash* might include anything. *Garbage* generally refers to organic material, such as food leftovers, and *waste* implies something left over, rather than something resulting from a disaster. Such a thorough discussion encourages students to focus on the meanings of words.

Some activities that provide students with contextual information include:

- *Have students create sentences that contain the new word.* Encourage students to create sentences that show a clear understanding of the meaning of the word—not just "I like chaos." More acceptable sentences are those that include the definition, such as, "Chaos is when everything is in disorder." Even more acceptable are sentences that extend the definition, such as, "The scene was complete chaos—desks were turned over, paint was splashed on the floor, and the trashcan was upside down." Of course, to write sentences containing a new word, students need examples of how it is used correctly. Definitions, even those that give brief examples, rarely provide enough information to guarantee that students have a real sense of how words are used. One way to scaffold students' use of new words is to have them complete sentence stems containing the word, e.g., "John thought it would *pacify* the teacher if..."[42]

[42] Beck, I. L., Perfetti, C. A., & McKeown, M. G. (1982). Effects of long-term vocabulary instruction on lexical access and reading comprehension. *Journal of Educational Psychology, 74*(4), 506-521.

- *Use more than one new word in a sentence.* Asking students to use more than one new word in each sentence they create can force them to look for relations among words.
- *Discuss the meaning of the same word in different sentences.* Many words have multiple meanings, which depend on the context in which the words appear. To prevent students from limiting word meanings to one particular context, have them use a new word in several different and varied sentences. For the word *chaos,* their sentences might include topics such as chaos in classroom behavior, chaos as clutter and mess, chaos in personal relations, and so forth.
- *Create a scenario.* Invite students to make up a story in which a new word features prominently. If students are too young for this activity, have them draw a picture story for a new word.
- *Create silly questions.* You might have students pair new words and use each pair to make a silly question.[43] For the words *actuary, hermit, philanthropist,* and *villain,* their questions might include "Can an actuary be a hermit?" "Can an actuary be a philanthropist?" "Can a philanthropist be a hermit?" "Can a philanthropist be a villain?"

2. Involve students actively in word learning. Students remember more when they relate new information to known information, transforming it in their own words, generating examples and non-examples, producing antonyms and synonyms, and so forth.

[43] Beck, Perfetti, & McKeown, (1982).

Instruction That Works

In one study of exemplary vocabulary instruction, activities were conducted in a five-day cycle. On the first day, the new words were defined, and students discussed the use of each word in context. This discussion took different forms, including discussion of examples and non-examples, pantomimes, and having students say "Yay" if the word was used correctly in a sentence and "Boo" if it was not. On the second day, after a review of the definitions, students might work on log sheets, completing sentences for each word. On the third day, they completed another log sheet, then worked on a timed activity in which pairs of students attempted in the shortest amount of time to match words with their definitions. This activity was repeated on the fourth day. After completion of the second timed activity, students were asked silly questions. On the fifth day, they took a post-test.

These activities varied somewhat with different units. For example, students also completed a "Word Wizard" chart activity each day. A Word Wizard chart is a chart that contains new vocabulary words. These words can be taken from a storybook, from a text, or just be words that are encountered in some way. Every time a child in the class found one of these words in context, the teacher attached an adhesive note with the child's name and the context next to the word. The first child who received 5, 10, or some other number of notes became the Word Wizard. Students were given credit toward becoming a "Word Wizard" by finding examples of each word used outside of class.

This program, or variations of it, significantly improved students' comprehension of texts containing words that were taught. As part of the program, it was revealed that twelve encounters with a word reliably improved comprehension, but four encounters did not. The instructional approach, which involved active processing of each words' meaning, had significantly greater effects than did a definition-only approach on measures of comprehension but not on measures involving the recall of definitions. These findings suggest that vocabulary instruction can improve comprehension, but only if the instruction is rich and extensive, and includes a great many encounters with to-be-learned words.

3. Use discussion to teach word meanings. Discussion adds an important dimension to vocabulary instruction. Students with little or no knowledge of some new words they encounter in a vocabulary lesson are often able to construct a good idea of a word's meaning from the bits of partial knowledge contributed by their classmates. (When the class as a whole does not know much about a particular word, however, you may have to help. Perhaps supplying some information about the word, such as a quick definition.)

Discussion can clarify misunderstandings of words by making the misunderstandings public. For words that a student knows partially, or knows in one particular context, the give-and-take of discussion can clarify meanings. When misunderstandings are public, the teacher can shape them into the conventional meaning.

Discussion involves students in other ways. As they wait to be called on, students practice covertly, or silently prepare a response. Therefore, even though you call on only one student, many other students anticipate that they will have to come up with an answer. As a result, discussion leads to increased vocabulary learning.[44] Without the practiced response, discussion is not likely to be valuable as a learning experience.

Bringing Instruction Together: A Sample Lesson

This sample lesson illustrates how a teacher can bring together the three components of explicit vocabulary instruction to teach words that are key to understanding the story *The Talking Eggs* by Robert San Soucil. The words chosen for instruction are *backwoods, contrary, dawdled, groping, rubies, and silver.*[45]

For the key word *backwoods*; read the following sentence from the story: "Then the old woman took her by the hand and led her deep into the backwoods." Ask students to predict what *backwoods* means. *Backwoods* is a compound, and, when the information from the word parts is combined with some information from the context, its meaning should be fairly clear. Next, ask students to describe the backwoods briefly.

[44] Stahl, S. A., & Clark, C. H. (1987). The effects of participatory expectations in classroom discussion on the learning of science vocabulary. *American Educational Research Journal, 24,* 541-556.

[45] This sample lesson is adapted from Stahl, 1999.

The key word *contrary* can be taught the same way, beginning with reading this sentence from the book: "You do as I say and don't be so contrary," and asking students to predict the meaning of the word from context. For this word, have students discuss a definition for the word, such as "disagreeable, raising objections," and encourage them to explain how the definition fits in the context of the sentence. As a follow up, you have them create some sentences that contain *contrary*. This can lead to a discussion of another, related meaning for *contrary*, that of "from another point of view," as in the expression *to the contrary.*

For *dawdled* and *groping*, begin once again by reading sentences in the story that contain the words. Because these words are verbs, however, you might want to pantomime the meaning of each, rather than supply a conventional definition. Then ask students to create sentences that use the words. You might define *dawdled* with some non-examples, because it is a word that has some clear antonyms, such as *hustled, ran, went quickly*, and so on.

For *rubies* and *silver*, begin by having the class discuss what precious things are. You might illustrate the words by providing pictures that show rubies and things made of silver. Next, work with the class to make a list of precious things, including rubies and silver, as well as gold, diamonds, and so forth.

The words used in the sample lesson are highly dissimilar. They were selected for instruction only because they happen to come from the story they students were reading. The techniques used to teach the words, however, are somewhat similar. For four of the six words, the teacher starts with sentences from the text, then asks students to create additional sentences to extend the meaning of the word beyond the text. Finally, the teacher also includes a definition, either a conventional verbal one or a gestural one, for each of the words.

The instruction this lesson illustrates is relatively minimal, designed to support the reading of the text. More elaborate instruction would shift the focus from the story to the vocabulary words, and might be useful in a classroom with many English language learners, or in any classroom when a greater emphasis on vocabulary is appropriate. More elaborate instruction also might include using additional sentence contexts for each word, a "yea or nay" activity ("Would you dawdle in the backwoods?"), or having students write a scenario, or story that contains these words.

Some Cautions

Explicit vocabulary instruction does seem to improve comprehension significantly, at least when the words taught come from the text students are reading. Nevertheless, some cautions are in order. First, teaching vocabulary as students read can, under certain circumstances, distract them from the main ideas of the text. Second, teaching words that are not important to understanding the text leads students to focus on individual word meanings rather than on the overall meaning of what they read. The more effort students expend focusing on word meanings, the less effort they will have available to recall information that is important to comprehension.[46] Thus, to be effective, prereading vocabulary instruction should focus on words that relate to the major ideas in a text, rather than on words that are interesting or unusual.

46 Wixson, K.K. (1986). Vocabulary instruction and children's comprehension of basal stories. *Reading Research Quarterly. 21*, 317-329.

Teaching Word Meanings as Concepts

Although there is general agreement that effective vocabulary instruction should include the components we have just discussed, there is no such agreement as to the most effective techniques for increasing students' knowledge of specific words. We do know, however, that the most effective instruction teaches word meanings as concepts, using a variety of techniques to help students establish connections among context, their prior knowledge, and the concepts or words being taught.[47]

In this part of the booklet, we discuss specific techniques that have proven successful in teaching word meanings as concepts. These include Concept of Definition Maps, Semantic Mapping, Semantic Feature Mapping, Possible Sentences, Comparing and Contrasting, and Teaching Word Parts.

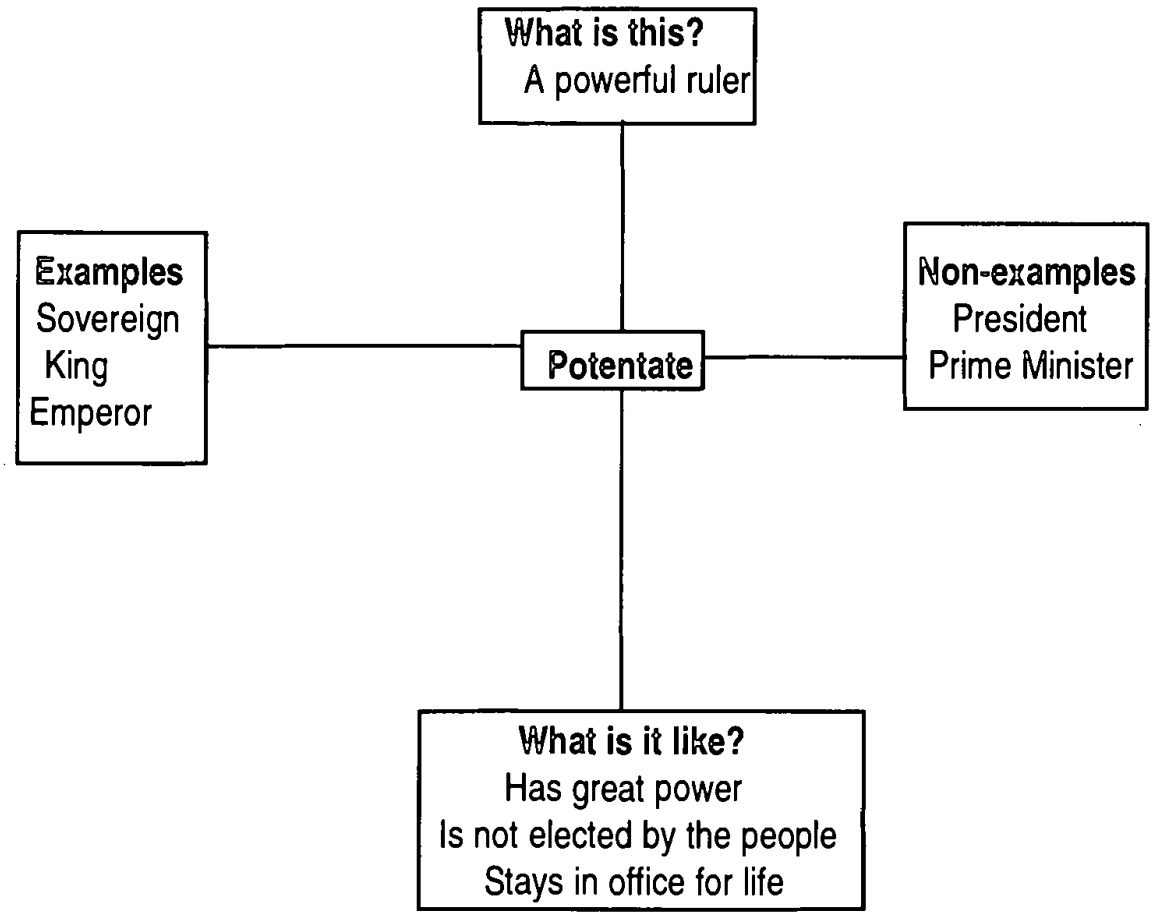
Concept of Definition Maps

Concept of Definition Maps (or Word Maps) reflect the idea that students need to have some understanding of what a definition is and how it works before they can give the meaning of a word on their own. Concept of Definition Maps are graphic displays that show common elements of a dictionary definition. These elements include (1) the category to which the word being defined belongs (*What is this?*), (2) some characteristics of the word (*What is it like?*), and (3) some specific examples and some non-examples of the word. Students refer to context, their prior knowledge, and dictionaries to find the elements needed to complete the map.

[47] Stahl, 1999.

The following filled-in map for *potentate* was prepared to clarify the meaning of the word *potentate,* which appeared in a story in a fourth-grade reader.

Concept of Definition Map



Once the map is complete, the teacher models how to write a definition using the information on the word map. For example, *A potentate is a ruler who has a lot of power. The people do not elect potentates, and some stay in office for life. Some types of potentates are kings, dictators, and emperors.* After writing their own definitions, students can confirm them by using dictionaries to look up *potentate*, then revise or add to their definitions, if necessary.

A simpler variation of the Concept of Definition Map is called the Four Square activity. In this activity, each student takes a sheet of paper and folds it so there are four sections. The students write the target concept word (such as *soothing*) in the upper left hand section of the paper, then write some examples of the concept in the upper right section (*baths, soft music, chocolate*), some non-examples of the concept in the lower right section (*loud music, traffic, crying babies*), and a definition in the lower left hand section (*having a calming effect*).

Semantic Mapping

Semantic Mapping involves a web-like graphic display. To begin instruction, students are presented with a concept that is central to understanding a selection or subject. They then brainstorm or freely associate words that are related to that concept. As students brainstorm, the teacher writes their suggestions on the board, adding words they need to learn.

For example, for a unit on weather, the teacher targeted the words *meteorology, global, precipitation, barometer,* and *hurricane* in the text students were about to read.[48] These words were defined and discussed during the brainstorming session. When the students finished brainstorming, the teacher and the class together developed the following map to show the relationships among the words. The target words were highlighted, and one section of the map was left blank so that the class could fill in another category after reading the selection.

Semantic Mapping is helpful for developing students' understanding of almost any concept. It has been used to develop concepts as diverse as polygons and the Dewey decimal system.[49]

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[48] Stahl, S. A., & Vancil, S. J. (1986). Discussion is what makes semantic maps work. *The Reading Teacher, 40*, 62–67.

[49] See Heimlich, J. E., & Pittleman, S. D. (1986). *Semantic mapping: Classroom applications*. Newark, DE: International Reading Association.

Semantic Map

world-wide **Global**	fronts high pressure low pressure **Patterns**	rain snow sleet hail fog **Precipitation**
Instruments barometer thermometer rain gauge anemometer	Meteorology [ ]	**Storms** thunderstorm tornado hurricane tsunami

Discussion seems to be a crucial element in the effectiveness of Semantic Mapping.[50] For example, an individualized mapping procedure, in which students studied maps on their own and did not engage in discussion, did not work as well as a group mapping procedure. As we pointed out earlier, discussion's value is that it seems to engage all students by making them rehearse possible answers to teacher questions.

Discussion during Semantic Mapping may be especially important for students with more limited vocabularies. These students may not know many of the related words, and thus they may learn these words along with the targeted ones. Students with more developed vocabularies can also benefit from discussion. These students may know most of the related words; therefore, seeing them will reinforce the meaning of the targeted words.

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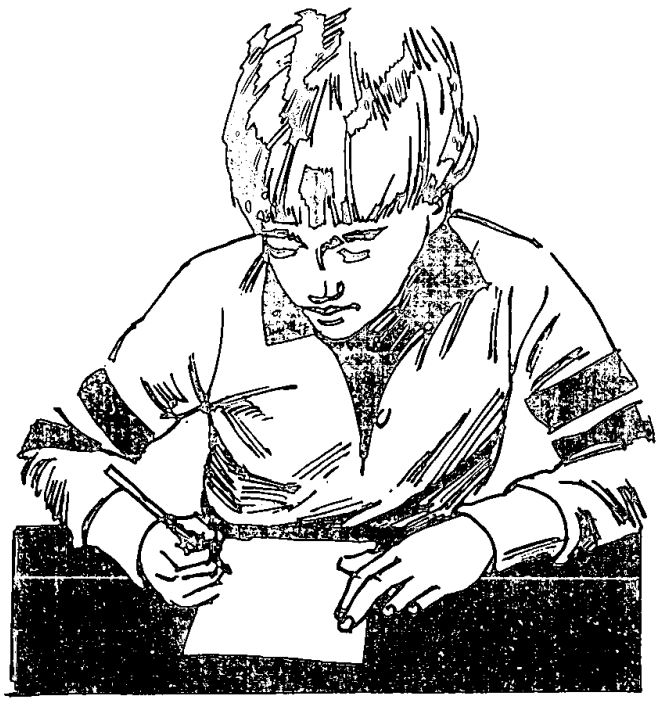
[50] Stahl & Clark, 1987; Stahl & Vancil, 1986.

Semantic Feature Analysis

Semantic Feature Analysis also draws on students' prior knowledge and uses discussion to elicit information about word meanings. Semantic Feature Analysis is similar to Semantic Mapping, with the exception that it uses a grid such as the one below rather than a map as a graphic display.

The left-side column of the Semantic Feature Analysis grid contains the names of members of the category to which the target concept belongs. The top row of the grid contains names of features of members of the category. Students should be encouraged to add terms either across the top or down the side during discussion. Groups of students or whole classes should discuss whether each item is an example of each concept, marking + for positive examples, — for negative examples, and ? for items which might be examples under certain circumstances.



The following grid was prepared for a unit on transportation.[51]

Semantic Feature Analysis

	two wheeled	four wheeled	one wheeled	foot powered	motor powered	on land	in the water	in the air
bicycle	+	-	-	+	-	+	-	-
car	-	+	-	-	+	+	-	-
unicycle	-	-	+	+	-	+	-	-
airplane								
boat								
hovercraft								
supersonic transport								
velocipede								

As with Semantic Mapping, discussion is the key in this activity, because there are many ambiguities in determining the feature of a concept, and discussion of these ambiguities can help students clarify the concept they are learning.

[51] This example is adapted from Stahl, 1999.

Possible Sentences

The Possible Sentences technique uses both known words and new words that are related to key concepts in a reading selection. The teacher begins by choosing some six to eight words from the text that might cause difficulty for the students. (In a content area text, these words are usually key concepts in the text, but they also may be more general words that relate to those key concepts.) Then, the teacher chooses an additional four to six words that are more likely to be known by the students. These familiar words are used to help generate sentences.

The teacher writes all of these words on the board, providing a short definition of each word if desired or if necessary. Most of the time at least one student in the class has knowledge of the word that can be shared. Students are directed to make up sentences that contain at least two of these words, and that might be in the selection they are about to read. The teacher writes these sentences on the board. Both accurate and inaccurate guesses are accepted, but are not discussed at this time. When the students are finished contributing sentences (and all words are included in at least one sentence), the teacher has them read the selection.

After reading, the class then returns to the sentences on the board, and discusses whether each sentence could or could not be true based on their reading. If a sentence could be true, it is left alone. If a sentence could not be true, then the class discusses how it could be modified to make it true.

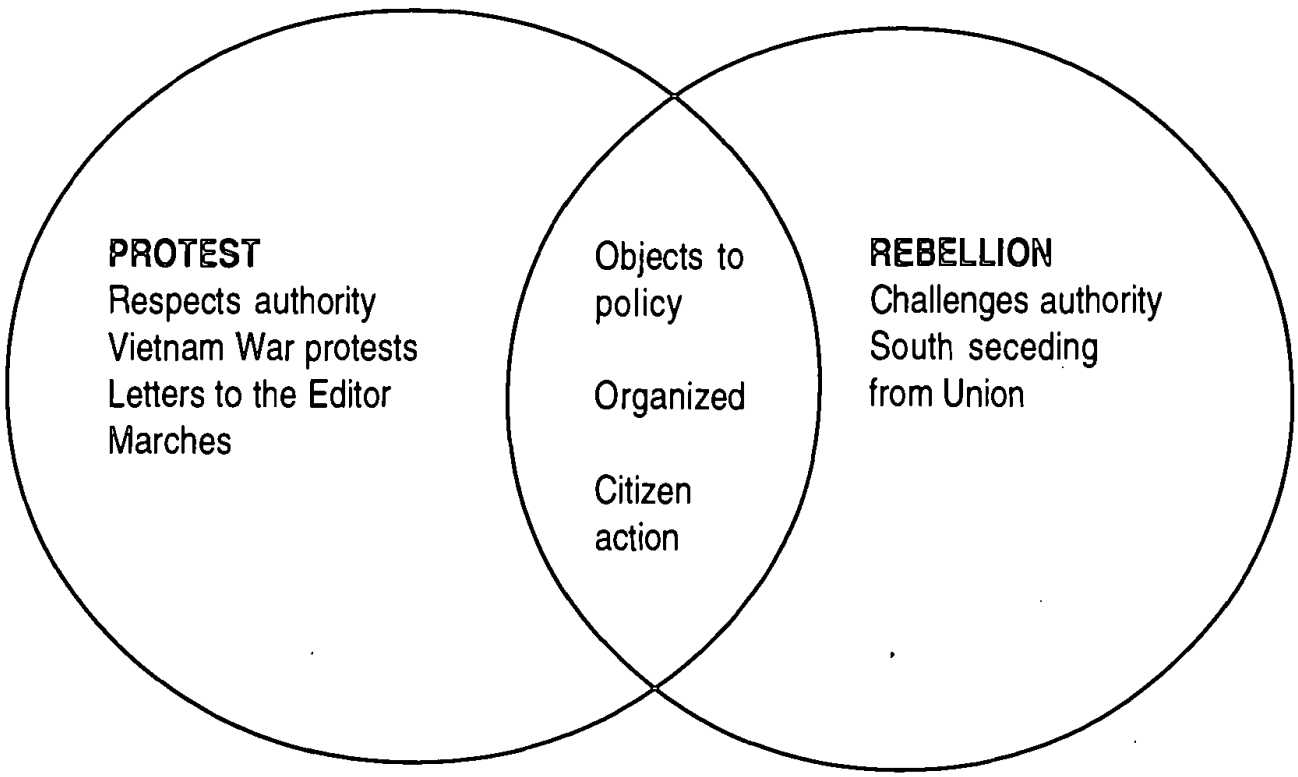
For a unit on weather, *front, barometer, humidity, air mass, air pressure,* and *meteorology* were chosen as the target words, with *high, rain, clouds,* and *predict* as the familiar words.[52] The criteria for choosing the target words included a consideration of which words might be difficult for fifth graders and which words were central to the concepts taught in a specific selection. The familiar words were words that students were likely to know, and that lent themselves to logical sentences that would relate to the major concepts in the selection.

[52] Stahl, S. A., & Kapinus, B. A. (1991). Possible sentences: Predicting word meanings to teach content area vocabulary. *The Reading Teacher, 45*, 36–38.

Comparing and Contrasting

Comparing and contrasting can help students extend their vocabularies by establishing relationships among concepts. A simple Venn diagram can be a good tool for comparing and contrasting such content-area concepts as *republic* and *democracy*, *organic* and *inorganic*, *symphony* and *concerto*, and so forth.

The following diagram was prepared as part of a unit on the American Revolution to compare and contrast the important concepts of *protest* and *rebellion*. The teacher first explained that whereas the American colonists thought that acts such as the Boston Tea Party were legitimate protests against British taxation, the British thought that the colonists were engaged in rebellion against their sovereign government. The difference in perceptions led to increasing tensions and eventually, revolution.



Teaching Word Parts

Teaching students to recognize and use information from word parts such as prefixes, suffixes, and roots can be an especially effective word-learning strategy for use with content area texts. These texts can contain many words that are derived from the same word parts. Although words such as *misread, interdependent,* and *substandard* can often be figured out from context, decomposing such words into known parts like *mis-, read, inter-, depend,* and so forth, not only makes the words themselves more memorable, but, in combination with sentence context, may be a useful strategy in determining the meaning of unknown words.

Students can aquire the meaning of word parts by inference as they read. However, although such a strategy may be part and parcel of normal reading, many students—even high school students—are unaware that breaking words into their parts can be a way to determine their meanings. In addition, students often do not know the meanings of common word parts.[53]

What parts to teach? A number of lists are available that contain hundreds of prefixes, suffixes, and Greek and Latin roots.[54] Although such lists may be useful, it is not possible or even fruitful to teach each element on each list. It seems more reasonable to teach students the most commonly used or important elements, and accompany this instruction with the teaching and modeling of a general strategy for breaking words into parts. One such strategy is to teach students to combine word-part information with information from the sentence context.

Prefixes. Only twenty prefixes account for 97% of prefixed words that appear in printed school English.[55] Teaching at least the most frequently occurring nine—if not all twenty—of these prefixes to middle school students can pay dividends in increased vocabulary learning.

[53] For example, Sternberg, R. J., & Powell, J.S. (1983). Comprehending verbal comprehension. American Psychologist, 38, 873-893.; o'Rourke, J. (1979). Prefixes, roots, and suffixes: Their teestinng and usage. Paper presented at the annual meeting of the International Reading Association, GA.

[54] For example, Dale, E., O'Rourke, J. (1986). Vocabulary building. Columbus, OH: Zaner-Bloser.; Fry, E.B., Fountoukidis, D.L., & Polk, J.K. (1985). The new reading treachers book of lists. Englewood Cliffs, NJ: Prenttice-Hall.

Suffixes. The most frequently occurring suffixes in printed school English are inflectional endings such as noun endings (*-s, -es*), verb endings (*-ed, -ing, -en*), and adjective endings (*-er, -est*).[56] In general, even young students use these endings in their oral language. Therefore, middle school and older students should have few problems learning and using them.

Derivational suffixes (such as *-y, -ly, -ial,* and *–ic)* appear in fewer than a quarter of all the words that contain suffixes, but they can also be useful to teach. Comprehension of relatively infrequent words such as *exponential* and *unwieldy* can be aided by knowledge of meaning of the *-ial* and *-y* suffixes.

The length of some suffixed words can occasionally overwhelm students who are less able readers. Learning to recognize the letter patterns that make common suffixes can help these students to distinguish root from suffix, thus reducing the size of the word and allowing them to focus on relevant information within the word.[57] Activities such as this are a natural extension to decoding instruction that teaches students to look at chunks of words.

Other suffixes, such as *-ful,* and *-less*, are meaningful components of words, contributing to words' meanings in much the same way as prefixes. Even suffixes without such stable meanings, such as *–tion* or *-ly*, might also help students identify words, if only to alert them to the grammatical function of words in sentences. For example, *-tion* indicates that a word is a noun; *-ly* at the end of a word indicates that it is an adverb.

The following list shows the most common prefixes and suffixes in printed school English.

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55 White, T.G., Sowell, J., & Yanagihara, A. (1989). Teaaching elementary students to use word-part clues. The Reading teacher, 42, 302-309.

56 White et al., 1989.

57 Adams, 1990.

The Most Frequent Affixes in Printed School English

Rank	Prefix	Percent of All Prefixed Words	Suffix	Percent of All Suffixed Words
1.	un-	26	-s, -es	31
2.	re-	14	-ed	20
3.	in-, im-, il-			
	ir- (not)	11	-ing	14
4.	dis-	7	-ly	7
5.	en-, em-	4	-er,-or (agent)	4
6.	non-	4	-ion, -tion,	
	-ation,-ition	4		
7.	in-, im- (in)	3	-able, -ible	2
8.	over-	3	-al, -ial	1
9.	mis-	3	-y	1
10.	sub-	3	-ness	1
11.	pre-	3	ity, -ty	1
12.	inter-	3	-ment	1
13	.fore-	3	-ic	1
14.	de-	2	-ous,-eous, ious	1
15.	trans-	2	-en	1
16.	super-	1	-er (comparative)	1
17.	semi-	1	-ive,-ative,	
			-tive	1
18.	anti-	1	-ful	1
19.	mid-	1	-less	1
20.	under-			
	(too little)	1	-est	1
All others		3		7

Roots. When students encounter unknown words such as *interdependent, readable*, and *substandard,* they can break them into prefixes, suffixes, and familiar English roots, and combine the information this analysis reveals with conceptual information they find in the context. But what can students do with content-area words such as *biosphere, astronomy, superstructure,* or *deconstruct*? In addition to their prefixes or suffixes, these words contain Greek or Latin roots. Researchers and educators are divided as to whether it is profitable to students to teach these roots. Some argue that the modern meanings of words (especially the most common derived words) often do not reflect the meanings of their historical roots, and that readers—particularly young students—might be misled by a literal translation of root to meaning. [58] For example, knowing that *-mort* refers to "death" may help students to figure out the meaning of *mortal* or *immortal*, but it probably does not help them to determine the meaning of *mortgage* or *mortify*. Likewise, knowing that *saline* means "salty" will probably not help students get the meaning of *salary*, even though the words are both derived from the same root, *sal.* (Salt was once so valuable that it was used to pay workers.)

On the other hand, having students elaborate basic information makes it more memorable.[59] Therefore, teaching roots may make new words more memorable by adding a story to their definition.

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[58] Nagy, W.E., & Anderson, R.C. (1984). How many words are there in printed school English? Reading Research Quarterly, 19, 304-330.

[59] Pressley, M. (1988). Elaborate interrogation. Paper presented at the annual meeting of the Inernational Reading Association, New Orleans, LA.

The solution may be to make a distinction between using word parts as an independent reading strategy and using word parts as a word-study tool. When students encounter new affixed words during independent reading, they will find it useful to be able to take off prefixes or suffixes and identify the word that remains. But because poor readers tend to be overwhelmed by long words, you may need to teach them how to use this strategy. For example, you might help students to figure out the meaning of the word *interdependent* by teaching them to cover the prefix *inter-*, then see if they recognize the rest of the word. If they do not recognize *dependent*, you can have them cover the suffix *ent,* leaving *depend.* Providing students with practice in adding and removing prefixes and suffixes might also be useful. For example, you might take the root word *dependent* and add prefixes such as *in-* or *non-* to make new words.

Teaching students to further breaking down words into Latin or Greek roots is not likely to be a helpful independent reading strategy. We doubt, for example, that a struggling reader will be helped by breaking *depend* down further into *de-* and *pend,* even if he or she could assign these word parts meanings such as "down" and "hang."

For the purposes of word study, however—when students have already been provided the meaning of the word—knowing the story or the history of the word may well make it more memorable.

A distinction also should be made between time spent studying those roots, especially Greek roots used in scientific terminology, that have relatively specific meanings (*bio, hemo, meter*), and time spent studying those roots, more often from Latin, whose meanings wander all over the map (for example, *conceive, deceive, receive*).

The following list contains commonly occurring Greek and Latin roots.

Common Greek and Latin Roots

Root	Meaning	Origin	Examples
aud	hear	Latin	audiophile, auditorium, audition
astro	star	Greek	astrology, astronaut, asteroid
bio	life	Greek	biography, biology
dict	speak, tell	Latin	dictate, predict, dictator
geo	earth	Greek	geology, geography
meter	measure	Greek	thermometer, barometer
min	little, small	Latin	minimum, minimal
mit, mis	send	Latin	mission, transmit, remit, missile
ped	foot	Latin	pedestrian, pedal, pedestal
phon	sound	Greek	phonograph, microphone, phoneme
port	carry	Latin	transport, portable, import
scrib, script	write	Latin	scribble, manuscript, inscription
spect	see	Latin	inspect, spectator, respect
struct	build, form	Latin	construction,destruction, instruct

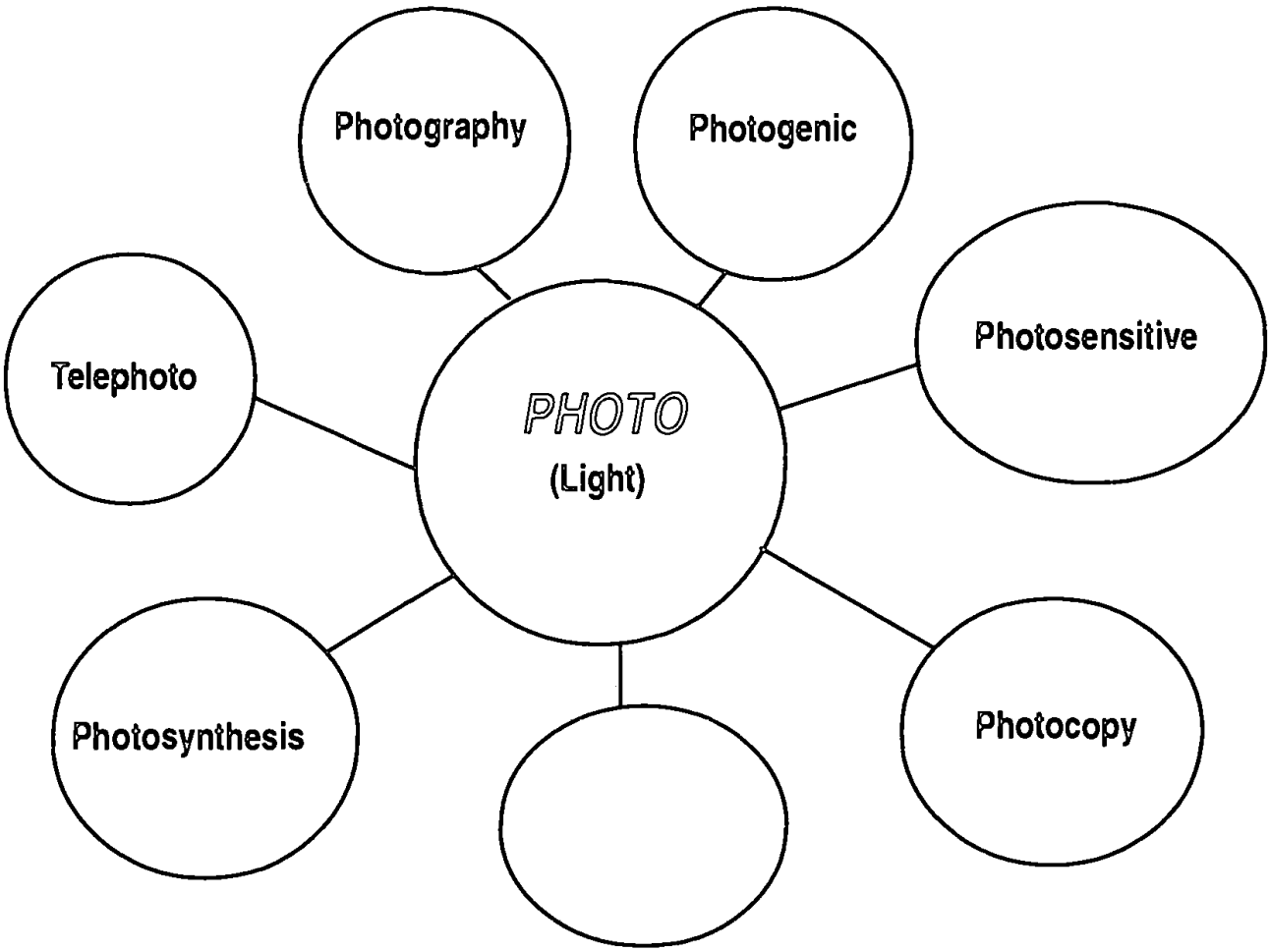
For content-area reading, you might find it worthwhile to make up lists specific to each area. Thus, for biology, such a list might include *bio-, chromo-, eco-, soma-,* and so forth.

How to teach word parts. Introductory word-part lessons should stress the idea that words can be composed of elements, such as prefixes, suffixes, and roots. These elements should be defined for students, but the emphasis should not be on learning the specific terms so much as on learning about how the parts function together to affect word meaning. For example, a lesson on *un-* might provide both examples of words beginning with *un-*, and also ask students to generate *un-* words of their own, including silly words. The use of imaginative extensions may not only solidify for students the meaning of *un-*, but also may solidify the concept of *prefix* in general. Providing students with some non-examples of prefixes, such as *under* and *uncle,* also help reinforce what prefixes are and how they work.

After students understand the basic concepts of prefix, suffix, and root, teaching them specific word parts should be easier for you. You can teach specific word parts within the context of other vocabulary instruction, as part of the discussion of a particular word's meaning, or by using explicit instruction. Such instruction should include providing a definition for the target word part, pointing out models of words using that word part, and having students read sentences containing the target parts. For prefixes, you should attempt to extend the instruction to include as many real and silly words as possible. For *un-,* you might use both real words such as *undone, unknown, unimaginable,* or *unbelievable*, and silly, or made-up words, such as *unbig, unhamburger, unsleep*, and so on.

This procedure can be used with suffixes as well as prefixes. Note, however, that although prefixes should be defined, because their definitions tend to be consistent over a variety of words, providing definitions of suffixes may serve only to confuse students. For example, defining the suffixes *-ance/-ence* and *-ment* as "condition of, quality of, or state of" does little to help students understand the meaning of *amendment* or *precedence.* Adding this information to the definition of a root such as *amend* or *precede* will do little to help students understand the meaning of *amendment* or *precedence.* A more productive procedure is to give students many examples of words containing suffixes, along with the words from which they were derived.

To teach roots, you might employ a similar teaching procedure. You might also find useful to use a word-part web, such as the following one for the Greek root *photo*. Such webs introduce students to many new words as well as teach a few key words. Discussing derivatives as part of the introduction of a new word, with or without a web, is useful and motivational.[60] Including in the discussion and web words that are relatively infrequent (such as *geocentric* or *geode*) can make target words (such as *geology*) more memorable for students.



[60] Nagy & Anderson, 1984.

Clearly there are benefits to be gained from teaching students to break words into their parts as a strategy for determining the meanings of new words. Combined with the use of context clues, this strategy seems to be especially fruitful, particularly in the content areas, where so many of the words students encounter in textbooks contain recognizable parts.

Conclusion

In the beginning of this booklet, we stressed the difficulties associated with trying to promote vocabulary development. In closing, we reiterate that helping students to develop large and powerful vocabularies is anything but an easy task. The number of words students need to learn is astronomical; their exposure to the vocabulary of literate English outside of school may be minimal; effective use of dictionary definitions, word parts, and context to determine word meanings requires students to be flexible and strategic learners; and traditional methods of teaching vocabulary are often ineffective in helping them deal with the complexity of word knowledge.

However, helping students develop strong vocabularies is essential to their success, both in school and beyond. Students may forget many of the specific facts they learn in school, but the words they learn will serve them as useful tools for a lifetime. Effective vocabulary instruction is an attainable goal. We hope that the information we have provided in this booklet will help you attain this goal for your students.

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