INCIDENTAL VS. INSTRUCTIONAL APPROACHES TO INCREASING READING VOCABULARY

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Our concern is with the effectiveness of different approaches to vocabulary, relative to two major, related educational goals: increasing the overall size of students' reading vocabulary and increasing students' ability to comprehend text. Educators and basal publishers rightly recognize the importance of vocabulary knowledge in reading and, therefore, include some form of vocabulary instruction in most current reading programs. Our thesis, however, is that explicit vocabulary instruction, even at its best, is not very effective at producing substantial gains in overall vocabulary size or in reading comprehension. Major progress towards these goals can only be attained by increasing incidental vocabulary learning.

In the first section of this article we consider the size of the task: that is, the number of words students would have to learn to make any substantial gains in overall vocabulary size. We feel that the size of the task is almost universally underestimated, or else simply not taken into account. Teaching the meanings of individual words may be effective for a specific reading lesson but it cannot result in any substantial increase in overall vocabulary size.

In the short run, incidental learning looks ineffective compared to almost any other instructional approach to vocabulary growth. But when the size of the task is accurately assessed, it is seen that the bulk of children's vocabulary growth necessarily comes through incidental learning. We will argue that regular and sustained reading can lead to substantial gains in vocabulary size.

In the second section we will consider the nature of the task: that is, the type of word knowledge that is necessary to facilitate reading comprehension. Evidence from a number of studies shows that reliable gains in reading comprehension can be produced through instruction of words from a given passage only if the instruction provides multiple encounters that supply a variety of information about the instructed words. Since vocabulary instruction can supply multiple, rich encounters for only a small number of words (or a small number of encounters for a slightly larger number of words), students must have additional opportunities to encounter large numbers of words repeatedly.

The Size of the Task

What would count as a reasonable yardstick for measuring the size of the task? That is, how can we decide how many words would be "a lot" to learn, and how many words would be "far too few?" One such measure is the number of words children are actually learning. According to our estimates, the reading vocabulary of the average child grows at a rate of 3,000 words per year between grades three and 12.

Another possible measure of the size of the task is in terms of individual differences. According to figures reported by M.K. Smith for grades four through 12, there is about a 6,000-word gap in vocabulary size between a child at the 25th percentile in vocabulary and a child at the 50th percentile. While Smith's figures for absolute vocabulary size are probably inflated, it still appears that bringing a low-vocabulary student up to the median would involve a gain of 4,000-5,000 words or more — not to mention keeping up with the yearly 3,000-word vocabulary growth of the average student.

Another measure of the size of the task is the number of unknown words a student encounters in reading. Unfortunately, there is little information available on the number of unfamiliar words students find in-text. However, additional analyses of data reported in part by Anderson and Freebody indicate that reading 25 minutes per school day an average student in the fifth grade would encounter tens of thousands of different words a year which he or she did not know, even by a lenient criterion of word knowledge. For a student with a smaller-than-average vocabulary, the number of unfamiliar words would be even higher.

Implications of the Size of the Task

No matter how one measures the task, then, it is extremely large. Most children encounter new words by
the tens of thousands per year, and learn thousands of them. Given this yardstick, what is the role of vocabulary instruction in children’s vocabulary growth? Surveys of classrooms reveal that very little explicit vocabulary instruction occurs. The number of words covered in such instruction is, at best, a few hundred a year. Thus, it is evident that most children must be acquiring the vast bulk of their vocabulary knowledge apart from instruction specifically devoted to vocabulary learning. It also follows that children who acquire a larger-than-average vocabulary — who may be learning 1,000 words per year more than the average student — are not doing so simply through better vocabulary lessons.

Should one take this as an indication of the sorry state of current vocabulary instruction in our schools and call for more time spent teaching words? There is room for improvement in the area of vocabulary instruction, but the size of the task is such that just teaching more words cannot be seen as the answer. With very few exceptions, even extremely ambitious vocabulary programs do not cover more than a few hundred words per year. While there are good reasons for teaching children the meanings of individual words, it is important to recognize the limitations of such instruction. Teaching children specific words will not, in itself, contribute substantially to their overall vocabulary size. Even an ambitious and systematic approach to vocabulary will not cover enough words to bring a low-vocabulary student up to average.

Promoting Large-Scale Vocabulary Growth

Given the size of the task, it is clear that teaching individual word meanings cannot, in itself, produce large-scale vocabulary growth in school children, or make up for the deficiencies of students with inadequate vocabularies. However, this fact should not lead to a fatalistic or laissez-faire attitude about vocabulary. On the contrary, the size of average annual vocabulary growth shows that most children are capable of learning new words rapidly and effectively. Therefore, it is very important to determine where and how children are learning so many words, and to determine how maximum use can be made of all these avenues of vocabulary acquisition. It is also important to find out why some children fail to utilize them effectively.

Learning Word Meanings From Context

If only a few hundred of the 3,000 words the average child learns in a year are learned in instruction specifically aimed at vocabulary, where are all the other words learned? A number of sources are possible: The speech of parents and peers, classroom lectures and discussions, school reading, free reading, and television. Speech of parents and peers may well be the most significant source of vocabulary for many children, but this factor is the least under the teacher’s control. We want to focus on the possible contribution to vocabulary growth of a factor that is, to a large extent, under the teacher’s control: Reading.

Many believe that incidental learning of words from context while reading is, or at least can be, the major mode of vocabulary growth once children have really begun to read. This is our position also. It is not, however, held universally. There are a number of grounds on which one can question the effectiveness of learning from written context as an avenue of vocabulary growth.

For the most part, arguments for learning from context have been largely “default” arguments. That is, learning from context is assumed to be effective because nobody can figure out where else children could be learning all those words.

Even if one accepts the “default” argument for learning from context, this does not establish that learning from written context is an effective means of vocabulary acquisition; much of the incidental word learning that makes up the bulk of children’s vocabulary growth might be from oral context.

Learning word meanings from oral context is obviously a major mode of vocabulary acquisition, especially in the preschool years. Many, if not most, of the thousands of words that children learn before they enter school are learned without any explicit definition or explanation. However, there is good reason to believe that written context will not be as helpful as oral context in illuminating the meanings of unfamiliar words. When a child learns a word from oral context, there is also a rich extralinguistic context — in the easiest case, the object named might be physically present. There are also clues from intonation and gesture that can make the context richer. In addition, the speaker will usually have some sensibility to gaps in the listener’s knowledge, and the listener can always ask questions if something isn’t understood. Written context will, therefore, usually not be as rich or helpful as oral context in providing information about the meanings of new words.

Some studies have, in fact, found written context ineffective at providing information about the meanings of new words. Written contexts usually supply only limited information about the meaning of unfamiliar words, and are sometimes even misleading. Also, experimental studies have generally found inferring meanings from context to be less effective than more intensive or explicit forms of instruction.

Such results pose a problem for those who would like
to believe that inferring meanings from written context is an effective means of learning new words. We believe that the discrepancy can be resolved by specifying more precisely how incidental learning of word meanings from written context takes place. Two recent studies have attempted to assess the volume of incidental word learning from context under as natural conditions as possible. Subjects were asked to read silently, without any information about the nature of the experiment. Texts were taken from school materials at the grade level of the subjects and represented narratives and expositions. Word knowledge was assessed after reading (in one study, a week later) without the text present. Target words were real words, selected by teachers as being the most difficult words in the text.

In most learning-from-context experiments, prior knowledge of the target words is controlled for by using either nonsense words or real words for which it can be demonstrated or assumed that subjects have no prior knowledge. In the two studies by Nagy et al., on the other hand, it was assumed that subjects would have at least partial prior knowledge of some of the target words. Degree of prior knowledge was controlled for statistically through pre-testing and control groups.

A basic presupposition of these studies was that learning word meanings from context proceeds in small increments. Any single encounter with a word in context is likely to provide only a small gain in knowledge of that word. If one starts with words about which nothing is known, a single encounter in context is not likely to produce a measurable degree of word knowledge, especially if the test of word knowledge used requires a fairly complete knowledge of the meanings of the words tested. This, it is argued, accounts for the failure of some experiments to find a significant amount of learning from context.

Using real words from grade-level text insures that for any given subject, there will be target words at various points along a continuum of word knowledge. Even a single encounter with the word in context should move most of these words a little bit higher on the scale of knowledge. For any given criterion of word knowledge, it is likely that some words not previously known to that criterion will be known to that criterion after reading.

The results of the studies by Nagy et al. indicate that reading grade-level text does produce a small but statistically reliable increase in word knowledge. This effect was found in all grades tested (three, five, seven, and eight). While different texts produced differing amounts of learning from context, there was no indication that the younger or less able readers were not able to learn new word meanings through reading.

The absolute amount of learning found was small: the chance of learning a word to any given criterion from one exposure in-text is somewhat around one in twenty. This low figure shows why learning from natural context appears ineffective compared to any other type of instruction on word meanings.

However, learning from context must be evaluated in terms of its long-term effectiveness. The long-term effectiveness of learning from written context depends on how many unfamiliar words are encountered over a period of time. If students were to spend 25 minutes a day reading at a rate of 200 words per minute for 200 days out of a year, they would read a million words of text annually. According to our estimates, in this amount of reading children will encounter between 15,000 and 30,000 unfamiliar words. If one in twenty of these words are learned, the yearly gain in vocabulary will be between 750 and 1,500 words.

Such a gain is substantial, considering the proportion of yearly vocabulary growth that is covered and the fact that it would be extremely difficult, if not impossible, for any word-by-word approach to vocabulary instruction to cover the same number of words in the same amount of time. The amount of reading required — 25 minutes per school day — may involve more reading than many students actually do, but could hardly be called excessive.

Incidental learning of word meanings from written context may, therefore, account for a large proportion of the annual vocabulary growth of those students who do read regularly. A period of sustained and silent reading could lead to substantial yearly gains in vocabulary, probably much larger than could be achieved by spending the same amount of time on instruction specifically devoted to vocabulary.

Given the size of the task — the number of words children should be learning in a year — an effective approach to vocabulary development has to take advantage of all avenues of word learning. Since the bulk of children's vocabulary growth occurs incidentally, that is, outside of situations specifically devoted to word learning, the most important goal of vocabulary instruction should be to increase the amount of incidental word learning by students. There are two complementary approaches to increasing incidental word learning: First, increasing children's ability to profit from potential word-learning situations outside of vocabulary instruction; and, second, increasing children's opportunities to learn.

There are a number of ways in which children's ability to learn words independently might be increased. Reasonable arguments can be made for teaching affixes, for the use of context clues, and for finding ways of
increasing children's motivation to learn new words. All of these are undoubtedly of some value, but we are not aware of any published research demonstrating a successful method for making students into better independent word learners. However, it is clear how children's opportunity to learn words independently can be increased: By increasing the amount of time they spend reading. Incidental learning of words during reading may be the easiest means of promoting large-scale vocabulary growth.

The Nature of the Task
So far, we have presented evidence that the size of the vocabulary-learning task is larger than is often recognized. The large number of words to be learned shows the limitations of any form of vocabulary instruction taking words one at a time, and shows the need for maximizing students' abilities and opportunities for learning words on their own. Now we want to consider the nature of the task: What kind of word knowledge one hopes to produce in students and how different labels of word knowledge affect comprehension.

Vocabulary Knowledge and Reading Comprehension
Educators and researchers have long known that a strong correlational relationship exists between vocabulary knowledge and reading comprehension: Children who know more words understand text better.14

This relationship is the motivation for what is done in vocabulary instruction. There are, of course, other reasons for teaching words — increasing students' speaking and writing vocabularies, improving scores on standardized tests, or teaching specific concepts in content areas. Much of the time, however, words are taught to enable students to understand what they read. Even if the words are taught for another purpose — for example, for use in writing — the instruction would be suspect if it did not also enable students to understand sentences containing the instructed words. An appropriate measure of the effectiveness of most vocabulary instruction, then, is its effectiveness in increasing comprehension.

The strong correlational relationship between vocabulary knowledge and reading comprehension would seem to imply that teaching words should automatically increase reading comprehension. This is not the case, however, as surveys of attempts to increase reading comprehension through vocabulary instruction15 reveal that approaches to vocabulary instruction differ widely in their ability to increase the comprehension of texts containing the instructed words. Stahl and Fairbanks report that "methods which provided only definitional information about each to-be-learned word did not produce a significant effect on comprehension, nor did the methods which gave only one or two exposures to meaningful information about each word."16 Pearson and Gallagher found that studies which were successful in increasing passage comprehension through pre-teaching vocabulary were the exception rather than the rule.17 The exceptional studies were those in which the vocabulary instruction was richer than a simple definitional approach.

It appears that the following are attributes which can make vocabulary instruction effective at increasing reading comprehension: Multiple exposures to words, exposure to words in meaningful contexts, rich or varied information about each word, establishment of ties between instructed words and students' own experience and prior knowledge, and an active role by students in the word-learning process.

The Difficulty of Producing Overall Gains in Reading Comprehension Through Vocabulary Instruction
Some types of vocabulary instruction have been shown to increase reading comprehension for passages containing the instructed words, although much of current practice does not seem to fall into this category of instruction. But can vocabulary instruction produce overall gains in comprehension for passages which have not specifically been targeted for instruction?

Stahl and Fairbanks found that vocabulary instruction did, in fact, produce significant, although small, gains in general reading comprehension.18 We find it surprising, not that the gain is small, but that it occurs at all. The number of words in print is so great that even an extensive program of vocabulary instruction is unlikely to cover much more than a minute percentage of the words in a text selected at random. Stahl and Fairbanks hypothesize that the general increase in reading comprehension produced by vocabulary instruction may be the result, not of the words specifically covered in the instruction, but in increased incidental learning that the instruction may also produce.19

It is highly unlikely that teaching individual word meanings could ever produce more than a very slight increase in general reading comprehension. Overall improvement in reading comprehension requires improvement in skills and strategies. In fact, explicit training in comprehension strategies has generally produced measureable gains in comprehension.20

Reading and Reading Comprehension
Although hard experimental evidence is not at hand, one can make a well-reasoned argument that reading itself can be an effective way of increasing reading comprehension. First, as we have already argued, wide
reading seems to be an effective way of producing truly large-scale vocabulary growth. There is also reason to believe that the type of word knowledge gained through wide reading would be the type that is effective at facilitating comprehension. Wide reading will lead to multiple encounters with words in a variety of meaningful contexts. To the extent that the rest of the text is comprehensible, these encounters will help the reader establish ties between the new word and prior knowledge. Pearson and Gallagher, in reviewing the effects of pre-teaching vocabulary on passage comprehension, conclude that “knowledge acquired gradually over time in whatever manner appears more helpful to comprehension than knowledge acquired in a school-like context for the purpose of aiding specific effects of pre-teaching vocabulary on passage facilitating comprehension. Wide reading will lead to an efficient means of increasing comprehension only with instruction as such is of limited usefulness in this regard.

Increased vocabulary knowledge is not the only benefit of wide reading that might increase comprehension. There is also the increase in general knowledge. Crafton found that reading one article on a topic strongly improved comprehension of a second article on the same topic. In addition, practice in reading would lead to improvement or automatization of a wide range of reading skills that contribute to comprehension.

Improving reading comprehension is certainly an important instructional goal. However, vocabulary instruction as such is of limited usefulness in this regard. Teaching the meanings of individual words appears to be an efficient means of increasing comprehension only with specific passages and with a relatively small number of words. To produce general gains in comprehension, the most profitable use of instructional time would appear to be a focus on comprehension skills and strategies. Reading itself should also increase comprehension through the accumulation of background knowledge and practice in various reading subskills.

In Defense of “Superficial” Vocabulary Instruction

It has been argued that the benefits of even definitional methods of vocabulary instruction have been underestimated in the following sense: We have shown so far that the level of word knowledge required to improve reading comprehension can only be gained by multiple exposures to a word which provide a variety of information about that word. Learning definitions alone does not produce this level of word knowledge and, therefore, does not enhance reading comprehension. However, just as we have already argued in the case of learning from written context, one should not underestimate the value of any meaningful encounter with a word even if the information gained from that one encounter is relatively small.

A single encounter with a word in a definitional approach to vocabulary will not produce very deep word knowledge; but it is very likely to provide more information than a reader’s initial encounter with that word in context, which, in fact, is likely to be rather uninformative, and, at worst, possibly misleading. This initial definitional encounter may provide a good foundation for learning from additional exposures to the word in context.

This line of reasoning is plausible enough. If demonstrated to be valid, such definitional encounters might provide grounds for the use of less-intensive methods as one component of a comprehensive approach to vocabulary, even though these methods by themselves cannot reliably increase reading comprehension.

Less-intensive methods would allow a larger number of words to be covered. However, the value of such methods depends on later multiple exposures to the instructed words in meaningful context. Therefore, such an approach to vocabulary would still require a large volume of reading to produce the kind of word knowledge that is actually the proper goal of vocabulary instruction.

Conclusion

The purpose of this article has been to make a case for the importance of incidental vocabulary learning. We do not want to overstate our case and imply that no words should be explicitly taught. But reports of new effective methods of vocabulary instruction seldom contain any warnings about their limitations. We feel that methods of vocabulary instruction can be effectively developed and implemented only if their limitations as well as their strengths are clearly understood. The major limitation of any approach to vocabulary development which takes words one at a time is that it can only cover a small fraction of the words that students should be learning.

The ultimate test of a comprehensive approach to vocabulary must be whether it results in large and long-term gains in reading vocabulary and reading comprehension. Success in these terms cannot be attained without increasing students’ incidental word learning. It is important to determine what types of vocabulary instruction can effectively increase students’ ability to learn independently. Attention must be given to affixes, context clues, awareness of words and their meanings, and motivation to learn them. But any attempt to increase incidental learning substantially must include an increase in the opportunity to learn new words, and this will occur primarily through regular, sustained reading.
Footnotes
6Draper, A. and G. Moeller. "We Think With Words (Therefore, To Improve Thinking, Teach Vocabulary)," in Phi Delta Kappan, 52, 482-484, 1971.
13Deighton, op. cit., see Footnote 11.
19ibid.
21ibid.
23Personal communication between authors and Isabel Beck, November 30, 1984.

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