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Learning Vocabulary through Reading

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Abstract

Children with early reading and vocabulary deficits often struggle in these areas across development. Although direct instruction is effective for teaching individual vocabulary words, it is time consuming, and may not be sufficient to close the vocabulary gap between good and poor readers. Instruction on deriving the meanings of unknown words from context may help to increase vocabulary knowledge in children with reading and vocabulary deficits. Toward this end, we review the research concerning factors that influence word learning from context and instructional approaches that have been shown to be effective in teaching derivational skills.

Learning Vocabulary through Reading Contexts

The importance of vocabulary knowledge for reading success is widely accepted. Vocabulary knowledge influences the development of word reading and reading comprehension skills (Storch & Whitehurst, 2002). Children find it easier to decode written words when they are part of their spoken vocabularies; likewise, they comprehend a text better when the words are familiar (Adams, 1990). This relationship between reading and vocabulary is also believed to be reciprocal, such that vocabulary facilitates the acquisition of reading skills, and reading facilitates growth in vocabulary (Stanovich, 1986). In the early grades, most of reading instruction is focused on word reading, as children learn to associate words that are already in their oral vocabularies with their printed forms. However, as children move towards upper elementary grades, they begin learning new words from the texts they read.

Most school-age children acquire new words very rapidly. For example, Nagy and Anderson (1984) estimated that typically-developing school-age children acquire an average of 3,000 words per year. Whereas direct instruction can only account for the learning of a few hundred words per year, Nagy, Herman, and Anderson (1985) state that *incidental* word learning, or the unconscious learning of new words while reading, can be considered the primary source of vocabulary growth during the school years.

Unfortunately, due to the reciprocal relationship between vocabulary and reading skills, children who start school with deficits in either reading or vocabulary tend to have difficulty acquiring skills in both areas. Although good readers acquire most new vocabulary items through reading, poor readers read less and are exposed to fewer new words (Allington, 1984), and when they do encounter new words in text they are less adept at inferring their meanings (Cain, Oakhill, & Lemmon, 2004). Thus, it appears that instruction on how to derive word meanings

from context should be an important part of intervention for children with vocabulary and reading deficits. Such instruction, if effective, would provide two main benefits: improving children's ability to deal with unknown words in context and increasing overall vocabulary (Fukkink & deGlopper, 1998).

To help poor readers understand the processes involved in deriving word meanings from context, one must first understand how learning words from context differs from learning by direct instruction, as well as the factors that influence children's ability to perform this skill. It is also critical to consider the evidence supporting the most common instructional approaches. Although more research is needed, the current evidence suggests that instruction does improve children's ability to derive words from context, and it appears that such instruction can be a useful component to intervention aimed at improving reading and vocabulary.

Characteristics of incidental word learning

When individuals learn a new word, they must learn to associate a form representation with a meaning representation. For spoken language, the form representation is simply the phonological, or sound, representation. In written contexts, the form representation also includes the orthographic, or spelling, representation. The first mapping of a form representation with a meaning representation is referred to as initial mapping, and both the form and meaning representations may be rather coarse and non-specific, or even inaccurate. Through repeated exposures to the word in various contexts, namely extended mapping, these representations become more refined.

Two main features differentiate vocabulary learning through reading from vocabulary learning from direct instruction. First, with direct instruction, the initial mapping period generally includes an explicit definition of the target word and a model of the word's

pronunciation. Often students are given one or more examples of how to use that word in a sentence. In contrast, written contexts do not always give explicit cues to an unfamiliar word's meaning. Thus, the child may infer only a vague representation of the word's meaning. Nonetheless, with continued exposures in new contexts, the child develops a more refined understanding of the word. Therefore, word learning from reading contexts is an incremental process, whereby knowledge of a word is increased and refined with each consecutive exposure in a new meaningful context (Schwanenflugel, Stahl, & McFalls, 1997).

Another difference between incidental word learning and word learning via direct instruction involves the processes by which children come to understand what attributes are not associated with a particular word. When children encounter a new word while reading, they are given relatively few clues as to what the word does not mean. Moreover, contexts may be misleading, as when a word is used in a sarcastic sense. Thus, the process of deriving the meanings of unknown words from context may result in the inclusion of false attributes, or incorrect features within the word's definition. Over- or under-extensions are common when the definition of the word has not been fully clarified. In a recent study of incidental word learning, Fukkink, Blok, & de Glopper (2001) demonstrated that the task of mastering a specific target word involves both learning its true attributes and unlearning false attributes that have been incorrectly associated with that word.

Factors influencing word learning from reading contexts

Several factors have been shown to influence students' ability to learn new words from reading contexts. In a meta-analysis of incidental word learning Swanborn & de Glopper (1999) estimated that, on average, 15% of unfamiliar words encountered in text would be learned incidentally. Three factors were found to significantly influence this rate. The first factor is

student age and/or reading level. Older and more advanced readers tend to acquire more new words from context than younger and less-able readers. The second is pre-sensitization to target words. Students perform better on post-tests of incidental word learning if target words are pointed out to them before they read the text. The third significant factor was the ratio of unknown words to familiar words in the text. A low ratio, meaning few unknown words in the context of many known words, was found to be more facilitative for incidental word learning. Texts that contain a low ratio of unknown words are easier to comprehend overall, making it easier for readers to infer the meanings of the unknown words.

Two other factors also appear to affect the rate of incidental word learning. One is reader purpose. A recent study by Swanborn & de Glopper (2002) found that students who are instructed to read for a purpose learn more new words than those who are told to read for fun and those who are given no specific purpose. Another factor involves the types of words that are to be learned from context. Schwanenflugel et al. (1997) found that two word factors were significantly related to incidental word learning by fourth graders. The first was word concreteness, or imageability. Concrete words (e.g., “beacon”) refer to items with clear physical properties and are easier to learn than abstract words (e.g., “tribute”), which are harder to visualize. The second was part of speech. Nouns were more difficult to learn from context than other word types, such as adjectives, adverbs, and verbs. The authors hypothesized that this was because the majority of the nouns in their study were less concrete than the words in the other grammatical categories.

Effectiveness of instruction in derivational skills

Research on the instruction of derivational skills is relatively new. However, a recent meta-analysis by Fukkink & de Glopper (1998) demonstrated that it is generally effective. This

meta-analysis included 22 treatments in 12 studies. The authors identified four treatment approaches among the studies included in the meta-analysis: 1) context clue instruction, 2) strategy instruction, 3) cloze instruction and 4) definition instruction.

In context clue instruction, students are taught a set of clues which can be used to identify the meaning of an unknown word. For example, Buikema and Graves (1993) taught seventh and eighth graders to identify clues to a word's sensual features (sight, smell, taste, touch, and sound), the action it suggests, or its purpose in the sentence. Other types of context clue instruction focus on recognizing synonyms, antonym, and definition clues.

Strategy instruction focuses on teaching a generic process for deriving a word's meaning. For example, Jenkins, Matlock, and Slocum (1989) taught students a strategy known as SCANR. This acronym reminded students to: "Substitute a word or expression for the unknown word. Check the context for clues that support your idea. Ask if substitution fits all context clues. Need a new idea? Revise your idea to fit the context," (p. 221).

Cloze approaches involve having children use contexts to complete a sentence. This process is thought to be similar to the process of deriving the meaning of an unknown word. In this approach, students discuss word choices that would or would not properly fit the sentence context.

Definition instruction focuses on teaching children how to formulate a definition. This approach is based on the assumption that giving students a concept of what a "definition" entails will make them more aware of the context clues that can help them derive the meanings of unfamiliar words.

Across all treatment types, the authors found a "medium" effect of treatment. By comparing the average effect size of instruction to the effect size seen for natural vocabulary

growth, they determined that the average effect of instruction was approximately equal to two years of natural development (Fukkink & de Glopper, 1998). This effect is especially promising given that the average amount of treatment across studies was five and one-half hours. Moreover, of the four instructional approaches examined, context clue instruction appeared to be the most beneficial. However, there were only a few studies of each approach that met the criteria to be included in the meta-analysis, so this conclusion should be viewed with caution.

Based on this meta-analysis, we can anticipate that instruction in derivational skills may be an effective way to improve vocabulary and reading skills for children with deficits. However, there are still many questions that need to be answered to provide the best treatment. First, we need more well-controlled studies of treatment effectiveness that control for background and prior vocabulary knowledge and include practice-only control groups. Second, we need studies which specifically target children with reading and vocabulary deficits because instructional approaches that work for average children may not necessarily be effective for children with reading and vocabulary problems. Third, it is important to remember that to be maximally effective, instruction should not only improve the way children infer the meanings of target words from context when instructed to do so, but also increase the number of words they are able to learn incidentally while reading independently (Fukkink & de Glopper, 1998). Thus far, few studies have been able to show generalization beyond the treatment context.

With regard to these recommendations, two recent strategy approaches show promise. The first, a process-based strategy approach used by Goerss, Beck, and McKeown (1999), is unique in that it was specifically designed for use with poor readers. In this approach, students learned a five-step process to deal with unfamiliar words. The first component involved reading to familiarize oneself with the context, and then rereading to pay attention to the unknown word.

In the second component, potential clues to the word's meaning were discussed. The third component involved forming an initial hypothesis of the word's meaning and giving a rationale for the hypothesis. The fourth component involved developing the hypothesis (examining other potential meanings) and placing constraints (ruling out meanings that don't fit) on the original hypothesis. The last step was to summarize what was known about the word at that point.

Because this approach focuses on the process of derivation, as opposed to the outcome, the investigators evaluated its effectiveness by examining whether the student appropriately used all of the available evidence to evaluate the target word's meaning, rather than judging the accuracy of the derived meaning. Thus, the intervention in this study did not provide explicit feedback on the correctness or incorrectness of students' definitions. The investigators administered the Word Meaning Acquisition Task (McKeown, 1985) to systematically evaluate students' progress in learning the strategy. This task assessed students' ability to select and reject possible meanings for a target word, justify the choices they made, and discriminate contexts that could narrow the pool of possible meanings for a target word. Although this study was limited by the fact that no control group was included, over the course of the intervention, all subjects increased their scores on every section of this task.

The second approach, developed by Baumann and colleagues combines traditional context clue instruction with morpheme analysis (Baumann, Edwards, Font, Tereshinski, Kame'enui, & Olejnik, 2002; Baumann, Edwards, Boland, Olejnik, & Kame'enui, 2003). Students are taught to use traditional context clues, such as synonyms, antonyms, and examples to form hypotheses about the meanings of unknown words. In addition, the morpheme analysis portion of instruction focuses on common prefix families that give clues to a word's meaning. For example, the prefixes "un-" and "in-" are part of the "not" family, and the prefixes "mono-,"

"bi-," and "semi-" are part of the "number" family. In a study of this approach, students were evaluated on their ability to perform morphemic and contextual analysis for treated and untreated words. Results showed that students who received this combined treatment approach were able to generalize the instruction to transfer words and performed morphemic and contextual analysis as well as students who received instruction in only one approach. Therefore, it appears that when these two components are combined in one approach, students learn to use a larger repertoire of tools to use when encountering unfamiliar words.

Conclusion

Taken together, improving children's ability to infer meaning from reading contexts can be an important component of intervention with school-age children. To this end, the effectiveness of several different instructional approaches have been documented, although additional research is needed to provide stronger support for each approach with children with language or reading impairments as well as to differentiate the relative effectiveness of each approach. Factors to consider in clinical treatment include teaching specific context clues along with a generic strategy, pre-exposing children to unfamiliar words that will be encountered in texts, and teaching morphological cues that can also be used to derive a word's meaning. Instruction in derivational skills is not expected to replace traditional direct vocabulary instruction, but appears to be a promising complement to traditional instruction that could help to close the gap between good and poor readers.

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Author Bios

Suzanne Adlof is a doctoral student at the University of Kansas studying the relationship between language and reading disorders. Holly Storkel is an associate professor at the University of Kansas interested in interactions between sound and word learning.

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