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Increasing Young Low-Income Children's Oral Vocabulary Repertoires through Rich and Focused Instruction

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Abstract

This article reports on 2 studies with kindergarten and first-grade children from a low-achieving elementary school that provided vocabulary instruction by the students' regular classroom teacher of sophisticated words (advanced vocabulary words) from children's trade books that are typically read aloud. Study 1 compared the number of sophisticated words learned between 52 children who were directly taught the words and 46 children who received no instruction. As expected, children in the experimental group learned significantly more words. Study 2, a within-subject design, examined 76 children's learning of words under 2 different amounts of instruction, either 3 days or 6 days. In Study 2, the vocabulary gains in kindergarten and first-grade children for words that received more instruction were twice as large. Student vocabulary was assessed by a picture test where students were presented with pictures that represented different words and were asked to identify which picture represented the word that the tester provided. The verbal test was similar but used a sentence description of a scenario instead of a picture. The instructional implications for which words to teach and how to teach them to young children are discussed.

Students' vocabularies play important roles in their lives and future possibilities. A large and rich vocabulary is strongly related to reading proficiency. For instance, it has long been acknowledged through correlational and factor-analytic studies that there is an intimate relation between vocabulary knowledge and reading competence (Davis, 1944, 1968; Singer, 1965; Thurstone, 1946). More profound are cognitive models of reading that assert that facility in verbal coding, including semantic codes, makes a critical contribution to comprehension (Carpenter & Just, 1981; Perfetti, 1985; Rummelhart & Or-

tony, 1977). There is also experimental evidence that vocabulary knowledge influences comprehension (Beck, Perfetti, & McKeown, 1982; McKeown, Beck, Omanson, & Perfetti, 1983; McKeown, Beck, Omanson, & Pople, 1985).

The practical problem is that there are profound differences in vocabulary knowledge among learners from different ability or socioeconomic groups, from toddlers through high school. Consider, for example, that in several studies first graders from higher socioeconomic status (SES) backgrounds knew at least twice as many words as lower-SES children (Graves, Brunetti, & Slater, 1982; White, Graves, & Slater, 1990), and that high school seniors near the top of their class knew about four times as many words as their lower-performing classmates (Smith, 1941). Although the latter reference is old, no current research suggests that the situation has improved.

Particularly disheartening is the finding that, once established, differences in vocabulary knowledge remain (Biemiller, 2001; Hart & Risley, 1995; Juel, Biancarosa, Coker, & Deffes, 2003). Although this is clearly bad news, such findings must be considered in conjunction with the lack of attention to vocabulary in schools. All the available evidence indicates that there is little emphasis on the acquisition of vocabulary in school curricula (Biemiller, 2001; Juel et al., 2003; Scott, Jamieson-Noel, & Asselin, 2003; Watts, 1995). Given that potentially unfamiliar words abound in school materials, the findings of lack of attention to developing meaning vocabulary in schools may seem odd. But as Scott et al. (2003) noted, teachers do much mentioning and assigning and little actual teaching of new vocabulary. Moreover, studies that have examined children's vocabulary over several years of schooling have indicated that schools are not doing much to increase student vocabulary and the mere act of attending school has little effect on vocabulary growth (Biemiller & Boote, 2006).

With the recognition of the vast differences in vocabulary evident early in children's lives and their consequences for subsequent literacy growth, there is an emerging consensus that schools need to focus on enhancing children's vocabulary from the beginning of schooling (Biemiller & Slonim, 2001; Coyne, Simmons, Kame'enui, & Stoolmiller, 2004). Thus, the current issue is, how can young children's vocabulary be enhanced?

Oral conversation is the primary source from which young children learn the words they know. But by the time children enter school, oral contexts are a less effective ground for vocabulary development because everyday conversations rarely contain words beyond the most common ones (Cunningham & Stanovich, 1998; Hayes & Ahrens, 1988). Nor are stories that young children typically read good material for vocabulary growth because the word stock of early school texts is restricted mainly to words children know aurally. However, trade books beyond children's own independent reading level that are read aloud are an excellent resource for vocabulary development. Trade books that are often read aloud to children have become known as "read-alouds." Such books characteristically present more complex structures and more advanced vocabulary than books children can read on their own in the early primary grades. This is because young children's listening and speaking competence is greater than their reading and writing competence.

Although read-aloud books are a fertile source for vocabulary, studies have revealed that the relation between reading aloud and learning vocabulary contained in the books is less straightforward than expected. Several teams of researchers who examined the effects on vocabulary of just reading aloud reported findings that were from nonexistent to unimpressive (Biemiller & Boote, 2006; Elley, 1989; Nicholson & Whyte, 1992; Penno, Wilkinson, & Moore, 2002; Robbins & Ehri, 1994; Sénéchal, Thomas, & Monker, 1995). Some of these researchers then augmented

the read-alouds with direct explanation of the word meanings as the story was read (Biemiller, 2004; Elley, 1989; Penno et al., 2002) or repeated readings of the stories (Elley, 1989; Penno et al., 2002). These strategies were shown to be more effective for acquiring vocabulary. However, Biemiller (2004) and Penno et al. (2002) reported concern that children showed boredom with stories read three times, which is the number of repetitions most often recommended as effective. In addition, repeated readings do not expose children to any additional contexts for the target words. This is a significant issue according to the features Stahl and Fairbanks (1986) identified as requisite for vocabulary instruction that will affect reading comprehension.

Some more recent studies have included following up the read-aloud with additional activities (Coyne et al., 2004; Wasik & Bond, 2001) or review of vocabulary (Biemiller, 2004). Such activities introduce new contexts for words and ask children to interact with word meanings by making decisions about their use in various contexts. These strategies have added to the amount of vocabulary learned. Such results are in concert with Stahl and Fairbanks's (1986) findings that providing students with words in varied contexts is important to learning and that activities that require students to process words at deep levels by interacting with their meanings and uses are needed to promote meaningful learning.

Given that more than just listening to daily read-alouds is needed to increase vocabulary, decisions must be made about the kinds of activities to be used to effect vocabulary acquisition and which words to teach. Selecting which words to teach may seem like an obvious primary issue; however, it has received surprisingly little attention. In fact, Coyne et al. (2004) pointed out that, although knowledge about how to teach vocabulary effectively is accumulating, what to teach remains elusive.

Studies typically say little about how researchers selected words from the stories to be read. The usual approach has been to select words that are likely unfamiliar to children and that are important to the story (Coyne et al., 2004; Wasik & Bond, 2001) or simply to choose words judged as likely unfamiliar (Elley, 1989; Penno et al., 2002; Robbins & Ehri, 1994). Recently researchers have proposed more specific considerations for choosing words (Beck, McKeown, & Kucan, 2002; Biemiller, 2005). Biemiller advocates focusing on words that are partially learned, those that between 20% and 70% of a target group of students know, because, according to his thinking, students can make the greatest gains on these words. Given that children are likely to learn such words rapidly, one could argue that the words do not need special attention because they can be learned from grade-level materials and simple teacher explanation of their meaning. Although many children come to school with inadequate vocabulary and remain at risk, all children's vocabulary grows during the school years (Hart & Risley, 1995). However, we venture that the growth more likely takes place among the 20% to 70% of words Biemiller (in press) noted. In contrast, Beck et al. (2002) suggested that word selection should depend on the nature of words themselves.

Beck et al.'s position is that words for vocabulary instruction should be selected from the portion of the word stock that comprises sophisticated words of high utility for mature language users and that are characteristic of written language. These words, which are described as tier 2 words (Beck et al., 2002), are domain general and are more sophisticated or more refined labels for concepts with which young learners are already familiar. For example, *notice* would be a refinement on the concept of seeing something; *commotion* would be a more sophisticated word for noisy running around. Rather than selecting words that children will learn more readily, as Biemiller advocates, Beck et al. favor focusing instruction on words least likely to be affected in any other way, that is, on words students

are less likely to learn through grade-level materials. Because of the role these words play in a language user's verbal repertoire, rich knowledge of words in this second tier could improve verbal functioning.

The significance of this contribution to verbal functioning is particularly apparent in learners who come from lower-SES backgrounds and have lower reading-skill levels. As we noted, such children begin school knowing many fewer words than their higher-SES peers (Graves et al., 1982; Hart & Risley, 1995; Moats, 2001; White et al., 1990), and this gap remains throughout schooling (Biemiller, 2001; Hart & Risley, 1995; Juel et al., 2003). Furthermore, this type of child is less likely to acquire, and become proficient in using, rich conceptual networks of tier 2 words independently. We base this statement on several sources of evidence.

One source of evidence is Curtis's (1987) finding that students with limited vocabulary knowledge knew not only fewer words but had more narrow knowledge of words with which they were familiar. The other evidence involves how acquisition and proficient use of tier 2 words might develop without direct in-school instruction. The chief way is through extensive reading; however, these children are typically less able readers. Not only are they less likely to read extensively, but evidence has shown that they are not facile in deriving word meaning from context. Specifically, McKeown (1985) found that less skilled fifth-grade readers were less able to use context clues to derive word meaning. In addition, even after the meaning of a word was identified or presented, these children were less able than more skilled readers to identify correct use of the word in subsequent contexts. Thus, the power of increasing vocabulary through reading is significantly diminished for less able readers.

Although their emphasis differed, both Biemiller (2001) and Beck et al. (2002) noted that a strong vocabulary program should include attention to words at a variety of levels. However, the issue underlying the research reported here is not which words to target but whether very young children, particularly those whose environments do not include extensive interactions with language, can learn and use the vocabulary that marks mature, literate language users.

Vocabulary knowledge has long been acknowledged as a complex phenomenon that can be shallow or deep along a number of dimensions (Beck & McKeown, 1991; Nagy & Scott, 2000). If vocabulary instruction is to enhance students' verbal literacy development, it needs to produce knowledge at a depth where connections are formed and the knowledge is sufficiently flexible and accessible so that students can use it in making sense of words in new contexts (Stahl & Fairbanks, 1986).

In terms of teaching words to deep levels, Rich Instruction has been shown to promote students' comprehension and use of words beyond simple tasks such as recognition of a synonym (Beck et al., 1982; McKeown et al., 1985; Mezynski, 1983; Stahl & Fairbanks, 1986). Rich Instruction includes explaining word meanings in student-friendly language, providing multiple examples and multiple contexts, and requiring students to process words deeply by identifying and explaining appropriate and inappropriate uses and situations and creating multiple contexts. McKeown et al. (1985) argued that approximately 400 words per year could be added to students' vocabularies under rich instruction. They noted that this would increase students' repertoires by about 4,000 words throughout grades 3 to 12 and would significantly enhance their verbal functioning. However, given what is now understood about the early appearance of a vocabulary gap in students from low- and high-SES backgrounds, it is imperative to begin adding systematically to students' vocabularies at an earlier age. Thus, the work described in this article was conducted to examine the extent to which children in kindergarten

and first grade could benefit from vocabulary instruction.

We report on two studies that provided rich vocabulary instruction of sophisticated words, words that are more advanced than those typically in young children's oral vocabularies, to kindergarten and first-grade children. Trade books that are often read aloud to children were sources for identifying words used in the two studies.

In Study 1 we examined the extent to which children learned a set of sophisticated words that were taught to them in comparison to children who did not receive the instruction. Study 2 explored children's learning of words under differing amounts of instruction.

Study 1

Method

Study 1 used a between-subjects, quasi-experimental, pretest and posttest control group design to investigate the effects of vocabulary instruction.

Participants

Students. Eight classes of children (four kindergarten and four first grade) from one school participated. Two classes from each grade were designated as experimental and the other two as comparison. Experimental classes were those in which teachers implemented Text Talk, the treatment used in the study, which is described below.

All children in the eight classrooms ($n = 121$) were invited to participate in the study, and all but two returned permission slips. Thus, we began the study with 119 children. However, because of the transient nature of the school district's population, we were only able to collect pretest and posttest data from 98 children (52 in experimental classrooms and 46 children in comparison classrooms), 85 of whom had begun the year at the school and 13 who entered school during the first semester.

The school in which the study took place was located in a small urban district with a lower-SES population. The children were all African American, and 82% were eligible for free or reduced-price lunch. Also, the school district was one of several recently identified as candidates for state takeover if achievement was not improved.

Teachers. When we approached the principal about conducting the study in her school the following fall, she invited the kindergarten and first-grade teachers to meet with us to hear about the study. Of the eight classrooms, six had permanent teachers at that time, with two on leave. Five of the permanent teachers attended the meeting and expressed interest in the study; the sixth, an experienced teacher, had health reasons for demurring. One of the five interested teachers, who was also experienced, later decided that family travel plans would interfere with her participation, leaving us with four participants. Finally, one participant decided that because she was attending graduate school classes, participating would be too great a commitment, so a teacher returning from maternity leave took her place. All teachers were female. Two were European American and two were African American. They had teaching experience of 2, 4, 20, and 25 years. Of the nonparticipating teachers, three were European American and one Asian American. They had teaching experience of 4, 7, 22, and 24 years.

Materials

The vocabulary instruction used was part of Text Talk, a research and development project based on read-alouds (Beck & McKeown, 2001; McKeown & Beck, 2003). Young students' thinking capabilities are advanced compared to their reading abilities at kindergarten and first grade. Text Talk takes advantage of this and provides them with opportunities for rich language development through discussion of narratives that are more complex than those they could read on their own. Our primary criterion for selecting texts was that they be conceptually challenging enough so that grappling with ideas and taking an active stance toward constructing meaning are required. In particular, in choosing stories we

looked for complexities of events, subtleties in expressing ideas, or presentation of unfamiliar ideas and topics. Given our goal of promoting the construction of meaning from linguistic content, we sought books in which the linguistic content was primary, that is, the books did not rely too heavily on pictures to communicate the story. A final criterion in consideration of constructing meaning was that stories exhibit an event structure rather than a series of situations, a format that is sometimes used in books for young children.

A related goal of using Text Talk was to develop vocabulary by taking advantage of the sophisticated vocabulary found in these trade books by teaching and encouraging oral use of several words from a story. We selected words for instruction by first listing those that we considered tier 2—sophisticated words of high utility. We then chose from that list three words by considering which words children would be most likely to apply to situations in their daily lives. We also considered whether the words were easy to explain in terms children already knew, and, for the set of words, whether they were sufficiently distinct from one another in both meaning and phonological/orthographic properties so as not to cause confusion.

For Text Talk, Rich Instruction was developed for several words from each story. The vocabulary instruction occurred after a story had been read, discussed, and concluded. Instruction took place after reading because the goal for teaching the words was to enhance general vocabulary development rather than comprehension of the story at hand. If we judged that any unfamiliar words were needed for story comprehension, the teacher briefly explained the meanings of those words during reading. Introducing words after the story takes advantage of the story usage of the words to provide a rich context with which to build initial understanding. Vocabulary instruction after reading also allows rich and varied activities to proceed without inter-

fering with building meaning of the story, as could occur if this kind of instruction were presented before reading. Tables A1 and A2 (see App. A) show the stories read and words targeted in kindergarten and first grade during Study 1.

As an illustration of the kind of instruction provided, consider the vocabulary instruction from *The Bremen Town Musicians* (Plume, 1998), a story about a series of abandoned animals who set off to make their musical fortune. The words *feast*, *exhausted*, and *cautiously* were selected from the story. The following explains the way *feast* was taught. The words in quotations are from the script that teachers received for the instruction and illustrate how the information was provided to students.

- First, the word was contextualized for its role in the story: "In the story, it said that the animals found the robbers' table full of good things to eat, and so they had a *feast*."
- Next, the meaning of the word was explained: "A *feast* is a big special meal with lots of delicious food."
- The children were asked to repeat the word so that they could create a phonological representation of it: "Say the word with me: *feast*."
- Examples in contexts other than the one used in the story were provided: "People usually have a *feast* on a holiday or to celebrate something special. We all have a *feast* on Thanksgiving Day."
- Children made judgments about examples: "Which would be a *feast*: eating an ice cream cone or eating at a big table full of all kinds of food? Why?"
- Children were asked to construct their own examples: "If you wanted to eat a feast, what kinds of food would you want?"
- The word's phonological and meaning representations were reinforced: "What's the word that means a big special meal?"

In addition to introducing words in the manner shown above, teachers were asked to reinforce the words on subsequent days.

For example, all teachers kept charts of the words from several stories posted on the wall. If children heard or used one of the words, a tally mark was placed next to the word. Teachers attempted to use the words in regular classroom activities. For instance, target words appeared in the morning message that students read each day, such as, "Today is Monday. Jamal wants a *feast* for his birthday."

Procedures

We introduced Text Talk to the four experimental teachers in the fall of the school year through a 3-hour workshop that explained the approach and the motivations for its development. Materials were provided to teachers in the form of 36 books at each grade level, with questions to frame the text interactions, and vocabulary activities. The instructional intervention comprised the vocabulary materials from books that were scheduled to be used over a 10-week period near the end of the school year. During the study, research staff members observed teachers once a week and met with the group of teachers every 2 weeks. During observations, research staff compared the script of the vocabulary lesson to the implementation in the classroom. The observations indicated that teachers implemented the lessons with a high degree of fidelity. They conducted each activity with each word as designed. The focus of feedback and discussions at meetings about vocabulary was how to encourage children to use the vocabulary words. During the meetings, teachers frequently offered examples of students' responses to the words or their use of the words beyond the lesson. The teachers' comments made it apparent that they were both pleased and impressed with their young students' learning.

The comparison group did not receive the Text Talk stories or the vocabulary instruction. They did, however, participate in daily read-alouds as part of the school reading curriculum. The books for that aspect of the curriculum were similar to those used in Text Talk, that is, they provided strong story lines and high-quality language. Some examples include *Annie and the Wild Animals* (Brett, 1985), *Doctor DeSoto* (Steig, 1982), and *Make Way for Ducklings* (McCloskey, 1969). Children hearing these stories would have been exposed to sophisticated vocabulary, including such words as *delighted*, *enormous*, *beckoned*, *delicate*, *timid*, and *morsel*. In the experimental classrooms, Text Talk was the daily read-aloud.

Measures

To determine whether the experimental instruction group and comparison no-instruction group were equivalent in vocabulary knowledge, we administered the Peabody Picture Vocabulary Test (PPVT) (1997) at the beginning of the school year to the original 119 participating students. PPVT data were examined only for the 85 children from the group who began the school year at the site and remained throughout the study. An analysis of these data showed that the experimental and comparison groups did not differ significantly in verbal knowledge, $F(1, 84) = .069$, $p = .793$. Mean scores on the PPVT were 29.78 for the experimental group and 34.36 for the comparison group.

To examine the extent to which children learned instructed words, experimenter-designed pretests and posttests were administered. These tests were developed around one set of 22 words for the kindergarten classes and a second set of 22 words for the first-grade classes. The vocabulary pretests were administered in February; the target vocabulary was taught in March and April. The tests were given to the remaining 85 students who started the year at the school and to 13 additional students who had enrolled during the school year, for a total of 98 students. Analyses showed that instructed and comparison children did not differ on their knowledge of the words on the pretest in kindergarten, $F(1, 45) = .118$, $p = .733$, or in first grade, $F(1, 51) = 2.23$, $p = .137$. Thus, we decided to include the additional 13 students in the study, giving us 98 participants. In the spring, 1 week af-

ter instruction was concluded, the same tests were administered as posttests.

The format of the tests was similar to the PPVT in that children selected from a set of four pictures the one that represented a target word, but the processing required by the task was different. The picture task asked students to decide which picture portrayed a situation described by a target word such as, "Which shows someone glancing? . . . someone who is satisfied? . . . something being revealed?" As such, this was not a straightforward picture-recognition task, as are most items for children this age on the conventional PPVT. Rather, it involved interpreting the semantic elements of the word in light of novel situations.

Results

The mean gains from pretest to posttest were analyzed in separate analyses of variance (ANOVAs) for kindergarten and first grade. Within grade level, children in the instructed group learned more of the words. Table 1 presents the means and percentages for pre- and posttests for kindergarten and first-grade experimental and comparison classes. The instructed kindergarten group showed significantly higher gains than the comparison classes, $F(1, 45) = 15.93$, $p = .000$, as did the experimental first-grade group, $F(1, 51) = 7.25$, $p = .010$. The mean gain for kindergartners in experimental classes was 5.58 words, and the mean gain for students in comparison classes was 1.04. The effect size (d) equaled

1.17.[1] The mean gain for first graders in the experimental classes was 3.64 words, and for first graders in comparison classes it was 1.71, with $d = .744$.

Differences in pretest to posttest gains between classrooms in each group were tested in separate ANOVAs for kindergarten and first grade. In kindergarten, there were no differences in gains between the two control classrooms, $F(1, 18) = 1.59$, $p = .22$, or the two experimental classrooms, $F(1, 22) = .64$, $p = .43$. Similarly, in first grade there were also no differences in gains between the two control classrooms, $F(1, 22) = .026$, $p = .87$, or the two experimental classrooms, $F(1, 26) = .95$, $p = .34$.

Discussion

The findings indicate that there was significantly more vocabulary learning in the instructed group compared to the group that received no instruction. Thus, it is feasible to teach words that are associated with mature language users to young children. As such, Study 1 might be considered a step in the direction of teaching vocabulary that is essential for more advanced literacy development.

Because all of the words were presented to the instructed group, why did they not learn even more? One possibility is that instruction of sophisticated words has a limited effect for young children because they do not yet have a strong enough language base to draw on. Thus, they cannot benefit

TABLE 1. Percentage and Mean Number of Words Known, by Grade and Instructional Condition

Grade/Condition	Pretest			Posttest			Pre-Post Gain			
	%	M	SD	%	M	SD	%	M	SD	d
Kindergarten:										
Instructed	45.27	9.96	2.74	66.09	14.54	3.68	20.82	4.58	2.75	1.17
No instruction	42.36	9.32	2.17	47.09	10.36	2.3	4.73	1.04	3.26	
First grade:										
Instructed	55.68	12.25	2.93	72.24	15.89	3.98	16.55	3.64	2.45	.74
No instruction	52.46	11.54	2.77	62.50	13.25	2.59	7.77	1.71	2.73	

NOTE.—Total possible score = 22.

optimally from the connections that rich instruction intends to build.

Another possibility is that an aspect of the instruction may not have been adequate. Although the instruction provided was rich (Beck et al., 2002) and went well beyond what is typically done in classrooms, the amount of time spent on instruction was less when compared with vocabulary studies that employed Rich Instruction with fourth graders (Beck et al., 1982; McKeown et al., 1983). In these studies, after words were introduced in ways similar to word introduction in the current Study 1, additional instruction was provided on 3 subsequent days involving activities that required children to engage actively with the meanings (e.g., students are presented with the word *lively* and they are asked to act out how a *lively* person would get out of bed in the morning). In contrast, in Study 1, only initial instruction was provided, although teachers were asked to use the words in class and to prompt the children to use them. Thus, we undertook Study 2 to determine the extent to which increased instruction would enhance learning.

Study 2

The hypothesis for Study 2 was that, to learn and develop their understanding of sophisticated words, children need more instruction over time. That is, they need more encounters with a word and those encounters must be distributed across several days. To determine the extent to which more instruction enhances learning, the focal contrast was developed as a within-subject comparison. Thus, Study 2 had a within-subject, quasi-experimental, pretest and posttest design. The approach was to provide the same initial Rich Instruction for all words (the kind of instruction in Study 1) and then to design additional instruction for a subset of the words. In this additional instruction, termed More Rich Instruction, students were instructed using the same instruction as in Rich Instruction, but the instruction on the words was more frequent and for a longer duration.

Method

Participants

Study 2 took place in a different school in the same small urban school district as Study 1. The children were all African American, and 81% were eligible for free or reduced-price lunch.

Students. All three kindergarten and all three first-grade classes participated in the study. Forty-nine children were enrolled in the kindergarten classes. Thirteen children moved before the study was completed. Data are reported for the remaining 36 kindergarten children with complete test data.

Fifty-six children were enrolled in the three first-grade classes. Thirteen children moved before the study was completed, and three children were eliminated because they were absent for at least 4 of the 9 weeks of instruction. Data are reported for the remaining 40 children with complete test data. (Missing-data procedures were used for one child who missed one of seven posttest sessions.)

Teachers. The teachers were all female; five were European American and one was African American. They had teaching experience of 7, 9, 12, 18, 20, and 32 years. The teachers were asked to participate by their professional development director who believed the approach might offer them insights to help develop their students' language abilities. The teachers agreed to participate.

Materials

Again, Text Talk read-alouds were the instructional treatment of the study. For each grade level, six words from each of seven trade books were identified for instruction (see tables B1 and B2, App. B).

Within each set of six words, the words were randomly assigned to one of two instructional conditions. One condition, Rich Instruction, was the kind of instruction used in Study 1 and exemplified in the word *feast* at the beginning of this article. Recall that in the *feast* example, the word was contextualized for its role in the story, the meaning was explained in a "student-

friendly" manner, and examples were provided in contexts other than the one used in the story. Children were then asked to determine whether the use of *feast* was an example or nonexample and to develop their own examples of *feast*.

The second condition was designated as More Rich Instruction because instruction was the same as Rich Instruction, but teachers were provided with additional instruction to be presented across several days. Students were instructed on six words per week. Students received Rich Instruction on all six words. They received more of the same instruction, More Rich Instruction, on three of those six words.

In addition, there were two review cycles in which the More Rich Instruction words appeared again. The instructional phase of the study lasted 9 weeks, with one set of six words presented each week, and the two review cycles.

Procedures

Text Talk was introduced to the six teachers through a 2-hour workshop that included an overview of the approach, the motivation for its development, and a demonstration of a Text Talk lesson. As part of the training, we provided two trade books with lesson plans to the teachers to acquaint them with the procedures. They were also asked to try these trade books and lessons with their classes. Staff members visited the classrooms when the teachers presented those stories to provide coaching and feedback.

For the study, as noted earlier, seven trade books, each with lesson plans for six words, were provided to teachers at each grade level. Teachers were asked to complete all instruction for a book over a 5-day period. On day 1 of the instruction, students read and discussed the story. On day 2, they received Rich Instruction for the first three words. On day 3, they received Rich Instruction on the remaining three words. On days 4 and 5, they received More Rich Instruction on those three words.

The More Rich Instruction words also appeared in two review cycles, one after the first 4 weeks of instruction and another after the next 3 weeks of instruction. Table C1 (App. C) shows how words from previous weeks were distributed across the review weeks.

Staff members visited each classroom four times across the 9 weeks of instruction. At each visit, they observed an entire lesson and gave the teacher feedback about the lesson. As in Study 1, research staff compared the script of the vocabulary lesson to the implementation in the classroom. The observations again indicated that teachers implemented the lessons with a high degree of fidelity and conducted each activity with each word as designed. Feedback focused on issues such as whether children were engaged, whether meaning seemed to be developed successfully, and whether children were able to provide good examples of the target words. At the end of the study we met with the teachers to provide them with the results. At the meeting, the teachers admitted that they had doubted that the children could learn the words in the instruction but were impressed with their ability to do so. Indeed, the most skeptical teacher concluded that "kids love words."

To estimate the amount of time spent on each word during instruction, the first consideration was that each More Rich Instruction word received instruction on 3 days during the initial instruction week (the initial day and 2 follow-up days) and 3 review days, for a total of 6 days. An additional consideration was that, in the initial week of instruction, there were three words in each activity set, whereas in the review weeks students worked on six words in each set, except for the final days, when either 24 (first review week) or 18 (second review week) words were involved.

Lessons were designed to be approximately equal in length, and, indeed, observations and teacher reports indicated that time spent on lessons was similar across each day—about 20 minutes. Lessons with larger numbers of words were deliberately

built around briefer activities so that children did not get overwhelmed. Thus, we obtained a more accurate estimate of the instructional time spent on each word by dividing the number of words in the day's activities by the 20 minutes of instruction. For the More Rich Instruction words, this number was multiplied by the number of days on which activities took place. The result was 6.6 minutes per word for Rich Instruction versus 27.6 minutes for More Rich Instruction. When we calculated the number of encounters per word in the instruction, we obtained a similar ratio of five encounters per word under Rich Instruction and 20 encounters with More Rich Instruction.

Measures

Pretests and posttests were developed for the 42 words for kindergarten and the 42 words for first grade. The test battery included the picture task format used in Study 1 and an additional all-verbal format. The latter was added to increase reliability.

The verbal format involved asking children to respond (yes or no) to four questions about each word. Two questions (one true and one false) asked whether a presented meaning matched a given word (e.g., "Does extraordinary mean very special?" "Does extraordinary mean very hungry?"). Two questions asked children to judge whether a brief context exemplified a word's meaning (e.g., "Would it be extraordinary to see a monkey at the zoo?" "Would it be extraordinary to see a monkey teaching school?"). Thus, this task called for both association with meaning elements and comprehension of situations involving the target word. Table D1 (App. D) provides examples of the task items.

There were 168 verbal items (42 words × 4 items) at each grade level. The 168 verbal items were distributed across six testing sessions, and the picture task was administered in one session. Thus, children were pretested in seven sessions. The same set of tests was presented as posttests a week after the conclusion of all instruction. We scored picture task items dichotomously. A word

on the verbal test was scored correct if at least three of the four items for that word were correct. This criterion was set because getting two of four correct would simply be chance performance, and expecting children to get all four correct would result in an underestimation of their knowledge.

Results

We hypothesized that children would have larger pre-to-post gains in number of More Rich Instruction words known than Rich Instruction words, and that the verbal test and picture test would both yield this result. These hypotheses were tested in separate analyses for kindergarten and first-grade groups. For each grade, a repeated-measures ANOVA was conducted consisting of three within-subject factors: time (pre vs. post), word type (More Rich Instruction vs. Rich Instruction), and test type (verbal vs. picture).

The results of the analysis for kindergartners indicated that the pre-to-post gain in number of More Rich Instruction words was significantly higher than the pre-to-post gain in number of Rich Instruction words known (time × word type, $F(1, 35) = 69.47$, $p < .001$). For the More Rich Instruction words, the mean gain was 8.17 words for the verbal task ($d = 2.09$) and 8.03 words for the picture task ($d = 2.71$). For the Rich Instruction words, the mean gain was 2.50 words for the verbal test ($d = .869$) and 2.97 words for the picture test ($d = 1.04$). The difference in gains was similar for both the verbal test and the picture test (time × word type × test type, $F(1, 35) = 0.48$, $p = .49$).

The results of the same analysis for first grade indicated that the pre-to-post gain in number of More Rich Instruction words known by the first graders was significantly higher than the pre-to-post gain in number of Rich Instruction words known (time × word type, $F(1, 39) = 64.10$, $p < .001$). The mean gain for More Rich Instruction words was 6.90 words on the verbal test ($d = 2.09$) and 6.88 on the picture test ($d = 2.71$). The

mean gain for Rich Instruction words was 3.80 words on the verbal test ($d = .869$) and 3.10 on the picture test ($d = 1.04$). The difference in gains was similar for both the verbal and picture test results (time × word type × test type, $F(1, 39) = 0.85$, $p = .36$).

Table 2 displays the average number and percentage of words kindergartners and first graders knew at pre- and posttest by word type, for the verbal and the picture tests. Differences in pretest to posttest gains on rich and more rich words did not vary by classroom in either kindergarten, for the verbal task (classroom × time × word type, $F(2, 23) = 0.98$, $p = .39$) or the picture task (classroom × time × word type, $F(2, 23) = 1.25$, $p = .30$), or in first grade for the verbal task (classroom × time × word type, $F(2, 37) = 0.43$, $p = .65$) or the picture task (classroom × time × word type, $F(2, 37) = 1.62$, $p = .21$).

Discussion

The results of Study 2 indicate that more instruction was beneficial, with gains about twice as large for words given more instruction, in both kindergarten and first grade. This finding demonstrates that outcomes for Study 1 were not the result of some inherent limitation to the learning of sophisticated words by young children. Additionally, both the picture and verbal tasks yielded strikingly similar findings. Both formats had high standards for demonstration of knowledge in that more was required than recognition of definitional information or a synonym, which is a common form of vocabulary knowledge assessment. In the picture task, children needed to process a question containing a target word and then identify a scene that represented a response to that question (e.g., "Which shows a cat being nestled?"). In the verbal task, children had to make decisions about the fit of a word to a situation.

General Discussion

The findings of the studies reported here demonstrate that children as young as kin-

dergarten and first grade can add sophisticated words to their vocabulary. Because the words are ones children may not encounter, one might question why those words should be taught. However, children who are read to routinely and often will encounter such words. After all, we chose the words from excellent and popular children's trade books. Thus, the instruction we provided offered children who may not be read to the opportunity to meet such words, and children who are read to a greater opportunity to master these words.

A key aspect of the argument for teaching young children sophisticated words is that the earlier word meanings are learned, the more readily they are accessed later in life (Izura & Ellis, 2002; Turner, Valentine, & Ellis, 1998). More specifically, accessing word-meaning information is more efficient and robust for words acquired early (Hirsh, Morrison, Gaset, & Carnicer, 2003). More efficient retrieval in turn promotes comprehension, whereas effortful retrieval jeopardizes it (Perfetti & Hart, 2002). Thus, it seems sensible to provide children with opportunities to gain facility with some difficult words at a young age. Knowing some of the harder words they will begin to encounter in texts may allow children to learn more of the unfamiliar words in those texts and consequently may provide a foundation for faster vocabulary growth. This reasoning is supported by a multitude of studies showing that the higher students' initial levels of vocabulary knowledge, the more words they are able to learn (see e.g., Cunningham & Stanovich, 1998; Hart & Risley, 1995; Nagy & Herman, 1987; Shefelbine, 1990).

The studies reported here show that more instruction brings about better results. This finding is not surprising, but it is important because it demonstrates that word learning does not occur easily. Extensive Rich Instruction was provided for all words, but learning occurred at a much lower rate for those words that got only the Rich Instruction compared to getting both Rich In-

Table 2. Percentage and Mean Number of Words Known, by Grade and Type of Instruction

| | Pretest | | | | | | Posttest | | | | | | Pre-Post Gain | | | | | | | |
| | Verbal | | | Picture | | | Verbal | | | Picture | | | Verbal | | | | Picture | | | |
Grade/Instruction	%	M	SD	%	M	SD	%	M	SD	%	M	SD	%	M	SD	d	%	M	SD	d
Kindergarten:																				
More Rich Instruction	28.29	5.94	2.41	33.71	7.08	2.17	67.19	14.11	4.97	71.95	15.11	3.58	38.90	8.17	4.49	2.09	38.24	8.03	3.44	2.71
Rich Instruction	35.05	7.36	2.78	34.52	7.25	2.74	46.95	9.86	2.97	48.67	10.22	2.96	11.90	2.50	3.60	.87	14.14	2.97	3.38	1.04
First grade:																				
More Rich Instruction	34.29	7.20	3.40	31.67	6.65	2.70	67.14	14.10	4.37	64.43	13.53	3.74	32.86	6.90	3.46	1.76	32.76	6.88	3.58	2.1
Rich Instruction	35.24	7.40	3.72	44.29	9.30	2.84	53.33	11.20	3.68	59.04	12.40	2.71	18.10	3.80	3.22	1.03	14.76	3.10	2.41	1.17

struction and More Rich Instruction. More instruction was needed, and even with more instruction, learning was far from 100%. These findings reinforce those from earlier research—that it takes a lot to know a word (McKeown et al., 1985).

The present studies illustrate that word learning does not occur easily. Other vocabulary studies using read-alouds have obtained similar results. For example, in research in which read-alouds were the source for vocabulary, learning has typically been about 15%, but has ranged from 4% in one condition of Elley's (1989) study, with 7-year-olds, to 45% in another study by Biemiller and Boote (2006) with children in grades K–2.

Researchers have identified several factors that may have caused learning to vary so widely in these studies. These include frequency of a word within the text, repetition of the story, direct explanation of the word's meaning, and the story itself. Elley also noted that words depicted in illustrations were learned more easily. Elley (1989) further found that adjectives and adverbs were the most difficult for children to learn, with children showing a mean gain of 24% on nouns but only 5.9% on adjectives and adverbs.

Elley's results confirm a well-established finding in psychology that concrete concepts are consistently better learned and comprehended than abstract concepts (Holmes & Langford, 1976; Paivio, 1971; Schwanenflugel & Shoben, 1983). What is noteworthy about the notion of picturable words being more easily learned is that a substantial proportion of the words targeted (Biemiller & Boote, 2006; Elley, 1989), or in some cases the only words targeted for instruction, were concrete, picturable words (Penno et al., 2002; Sénéchal & Cornell, 1993; Wasik & Bond, 2001). Thus, generalizations made from those findings just noted may overestimate the amount or ease of learning that can be expected from story read-alouds or from simple additions such as repeated readings or brief explanations of word meaning.

In the studies reported here, the target words were largely adjectives and adverbs (in kindergarten, 20 adjectives/adverbs, 7 nouns, and 15 verbs; in first grade, 19 adjectives/adverbs, 5 nouns, and 18 verbs). The nouns taught were not readily picturable, for example, *commotion*, *journey*, *necessities*, and *masterpiece*. Though the words taught in the present studies were generally more abstract, the outcomes were within the ranges of findings in earlier read-aloud research. In the earlier work, depending on story and condition, gains ranged from 4% to 30% (Elley, 1989), and from 19% (Biemiller, 2004) to 45% (Biemiller & Boote, 2006). Sénéchal and Cornell (1993) reported gains of 21%, and the gain in Penno et al. (2002) appears to be about 25%.

Another factor that is relevant to how much learning took place in the present studies is the type of knowledge children acquired. As we noted, the most commonly targeted type of knowledge in vocabulary instruction and assessment is recognition of definitions or synonyms. However, evidence suggests that teaching students to recognize the meanings of words does not readily lead to improved comprehension (McKeown et al., 1985; Mezynski, 1983; Stahl & Fairbanks, 1986).

In learning the words, children in our studies responded to instruction that required them to make decisions about the appropriateness of contexts for newly learned words, develop uses for new words, and explain why uses made or did not make sense. Thus, what we asked children to do went well beyond what is typically required in vocabulary instruction and assessment. Children's performance on the measures we used called for them to make sophisticated decisions about words. Part of the verbal measure asked them to identify correct and incorrect paraphrases of the word's meaning. The other half of the measure asked them to identify examples of correct and incorrect contexts for the word, such as, "If it

snowed so much that you had to stay overnight at school . . . would you be *stranded*?" and "If you rode your bike home from the park . . . would you be *stranded*?"

The items in the picture task used in the present studies did not simply require identifying a pictured object, as do the majority of PPVT items for children the age of our participants. Rather, the items in the picture task we used often required children to consider which of several scenes a word could describe. For example, a first-grade item for *dignified* asked, "Which picture shows people being dignified?" The four pictures showed (1) a couple dressed in elegant clothes standing together, (2) people in ghost and witch Halloween costumes, (3) two men leaning toward each other and looking around as if hiding from someone, and (4) two children pulling at different arms of a teddy bear. Thus, the findings in these studies indicate more than associative learning of a meaning and definition or of memory of definitional information. To score well on the assessments, students had to make sense of a context in which the word was being used.

Several limitations of the work reported here need to be noted. Conclusions are limited by the types of measures used, that is, we did not use a productive measure, nor did we assess comprehension of text containing the instructed words. Because of time constraints (the school year ended), there was no comparison to a different type of instruction, and we did not assess long-term gains. In Study 1, another limitation is that, though the comparison students were exposed to the same sophisticated vocabulary words as the experimental students, they did not read the same stories. The comparison classes in Study 1 were used to compare students in experimental classrooms to those receiving regular instruction. Thus, because the teachers in these comparison groups already had their lesson plans designed and stories picked out for the year, we decided that it would be unfair

to require them to switch to the Text Talk stories.

Given that direct instruction in vocabulary requires teacher planning and teacher and student time and results in less than complete learning, should direct instruction be viewed as an overly time-consuming way to build vocabulary? In comparison, consider what is required for purely incidental learning of word meanings to take place. In their study of children's oral language acquisition, Hart and Risley (1995) extrapolated the number of words children were exposed to and the number of words in their vocabulary. They estimated that higher-SES children were exposed to over 30 million words of spoken language by the time they were 3 years old and on average had a vocabulary of about 1,100 words. Children from working-class homes were exposed to over 20 million words and had vocabularies of about 700 words, and children from lower-SES homes heard about 10 million words and knew about 500. The message here is that learning word meanings is not particularly efficient, no matter how it is done. When it happens incidentally—outside of instruction—people are not aware of the enormous number of words and encounters that come their way in order for learning to take place.

In terms of the kinds of words taught in the work reported here, the strong case made for the advantages of teaching young children difficult words does not imply that vocabulary instruction should consist exclusively of such words. Certainly, less sophisticated words are candidates for instruction. But an important note about different kinds of words is that they call for different instruction; not all words need to be as elaborately and extensively instructed as in the present studies (Graves, 1987, 2000). The balance of the kinds of words taught needs to be addressed by the field. In considering balance, it is important to determine the type of instruction that is appropriate for and the amount of classroom time to be devoted to different kinds of words.

Appendix A

Table A1. Kindergarten Stories and Target Words for Study 1

Story/Author	Target Words
Bremen Town Musicians, by Ilse Plume	*feast, exhausted, cautiously*
How Many Stars in the Sky, by Lenny Hort	*gazing, dazzling*
Jamela's Dress, by Niki Daly	*clutching, cross*
Mouse in the House, by Patricia Baehr	*toppled, nibble, appear*
Mr. Tanen's Ties, by Maryann Cocca-Leffler	*appropriate, concentrate, charming*
Mrs. Potter's Pig, by Phyllis Root	*glisten, complain*
Popcorn Dragon, by Jane Thayer	*envious, forlorn, delighted*
Rusty, Trusty Tractor, by Joy Cowley	*sprout*
Santa's Book of Names, by David McPhail	*lunge*
Sweet Strawberries, by Phyllis Reynolds Naylor	*impatient, stingy*

Table A2. First-Grade Stories and Target Words for Study 1

Story/Author	Target Words
Amos and Boris, by William Steig	*miserable, immense, leisurely*
Bravest Dog Ever . . . Story of Balto, by Natalie Standiford	*panic*
Burnt Toast on Davenport Street, by Tim Egan	*festive, absurd*
Friday Night at Hodges' Cafe, by Tim Egan	*satisfy, menacing, exquisite*
Grandpa's Teeth, by Rod Clement	*complain*
Ida and the Wool Smugglers, by Sue Ann Alderson	*meadow*
Livingstone Mouse, by Pamela Duncan Edwards	*argumentative*
Metropolitan Cow, by Tim Egan	*fortunate, dignified, rambunctious*
Mole's Hill, by Lois Ehlert	*snarl, quiver, stroll*
Mountain That Loved a Bird, by Alice McLerran	*amazed, nestle*
Possum's Harvest Moon, by Anne Hunter	*gaze, creature*

Appendix B

TABLE B1. Kindergarten Stories and Target Words for Study 2

Story/Author	Words	
	Rich Instruction Only	More Rich Instruction
An Extraordinary Egg, by Leo Lionni	astonished	commotion
	enormous	impressed
	extraordinary	inseparable
Bremen Town Musicians, by Ilse Plume	cautiously	drooped
	companions	feast
	faithfully	journey
Doctor DeSoto, by William Steig	protect	delicate
	quiver	morsel
	timid	stumbled
Mrs. Potter's Pig, by Phyllis Root	glee	cling
	glistened	clutching
	sprint	shrieked
Pocket for Corduroy, by Don Freeman	affectionate	insisted
	drowsy	steep
	reluctant	nuzzled
Sweet Strawberries, by Phyllis Reynolds Naylor	herded	gruffly
	impatient	merchant
	stingy	remarkable
The Popcorn Dragon, by Jane Thayer	delighted	forlorn
	envious	pranced
	stroll	scorched

TABLE B2. First-Grade Stories and Target Words for Study 2

Story/Author	Words	
	Rich Instruction Only	More Rich Instruction
Amos and Boris, by William Steig	miserable	evaded
	leisurely	immense
	stranded	necessities
Friday Night at Hodges' Cafe, by Tim Egan	impressed	exquisite
	menacingly	satisfy
	savoring	sneered
Grampa's Teeth, by Rod Clement	disaster	interview
	grave	mumbled
	suspicious	revealed
Livingstone Mouse, by Pamela Duncan Edwards	investigating	murmured
	peculiar	notice
	shudder	plodded
Metropolitan Cow, by Tim Egan	dignified	fortunate
	grateful	rambunctious
	prominent	ridiculous
Mountain that Loved a Bird, by Alice McLerran	amazed	distances
	preen	nestled
	soared(ing)	sheltered
Patchwork Quilt, by Valerie Flournoy	dread	anxious
	glanced	plead
	masterpiece	ruin

Appendix C

TABLE C1. Word Sets Reviewed, by Day and Review Week

Day	Review Week 1	Review Week 2
1	Words from weeks 1, 2	Words from weeks 6, 7
2	Words from weeks 3, 4	Words from weeks 5, 6
3	Words from weeks 1, 3	Words from weeks 5, 7
4	Words from weeks 2, 4	Words from weeks 5–7
5	Words from weeks 1–4	

Appendix D

TABLE D1. Example Items from Verbal Task

	Context		Meaning	
Word	Yes	No	Yes	No
miserable	If you missed going to a party because you had the flu . . . would you feel miserable?	If your team won its first game . . . would you feel miserable?	Does miserable mean feeling very unhappy?	Does miserable mean feeling very excited?
immense	What if you saw something the size of an elephant . . . would it be immense?	What if you saw something the size of an ant . . . would it be immense?	Does immense mean very big?	Does immense mean very happy?
leisurely	If you saw a man walking slowly through a park . . . would he be moving leisurely?	If you saw a girl eating her lunch quickly . . . would she be eating leisurely?	Does leisurely mean doing something slowly because you are not in a hurry?	Does leisurely mean covering your face?
evaded	If you steered your bike away from a big hole . . . would that be evading?	If a dog jumped in the air to catch a stick . . . would that be evading?	Does evade mean to avoid or get away without doing something?	Does evade mean to have a bad dream?
stranded	If it snowed so much that you had to stay overnight at school . . . would you be stranded?	If you rode your bike home from the park . . . would you be stranded?	Does stranded mean to be stuck and not be able to leave?	Does stranded mean to feel clean all over?
necessities	If you were going on a camping trip . . . would taking food and water be a necessity?	If you were playing inside . . . would wearing a hat and mittens be a necessity?	Does necessity mean something important that you must have?	Does necessity mean a place to hide?

1. Effect sizes were calculated using Cohen's *d* standardized effect size using original means and pooled standard deviations as per Dunlop, Contina, Vaslow, and Burke (1996), which is a more conservative estimate of actual effect size. Effect size can be interpreted as strong for *d* values of 0.8 or higher, moderate for $d = 0.5$–0.79, and weak for $d = 0.2$–0.5 (Kotrlik & Williams, 2003; Levine & Hullett, 2002).

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