

Teaching Vocabulary in the Early Childhood Classroom

BY SUSAN B. NEUMAN AND TANYA S. WRIGHT

It seems almost intuitive that developing a large and rich vocabulary is central to learning to read. Logically, children must know the words that make up written texts in order to understand them, especially as the vocabulary demands of content-related materials increase in the upper grades. Numerous studies have documented that the size of a person's vocabulary is strongly related to how well that person understands what he or she reads, not only in the primary grades, but in high school as well.¹

Yet here's the practical problem. Right from the beginning of schooling, there are profound differences in vocabulary knowledge among young learners from different socioeconomic groups. Just consider the following statistics: by age 4, a child's interaction with his or her family has already produced significant vocabulary differences across socioeconomic lines, differences so dramatic that they represent a 30 million word "catastrophe" (i.e., children

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from high-income families experience, on average, 30 million more words than children from low-income families).^{*} Recent analyses indicate that environmental factors associated with vocabulary development and emergent literacy skills are already present among children as early as 15 months of age.² By first grade, unfortunately, the repercussions become all too clear: children from high-income families are likely to know about twice as many words as children from low-income families, putting these children at a significantly higher risk for school failure.³

Even more disturbing, however, is that these statistics are often treated as inevitable, more or less a byproduct of poverty or low-income status. Think of the consequences! This would mean that these children could be designated as reading failures before they ever enter through the schoolhouse doors.

Luckily, there is now a rich and accumulated new knowledge base that suggests a far different scenario. Consider these points:

- The highest rate of vocabulary development occurs during the preschool years; therefore, it represents a crucial time when we can intervene.⁴
- Effective vocabulary intervention can ameliorate reading difficulties later on. Children with resolved vocabulary delays can go on to achieve grade-level expectations in fourth grade and beyond.⁵
- The quantity, quality, and responsiveness of teacher and parent talk can effectively *mediate* socioeconomic status, thereby

^{*}For more on this vocabulary gap, see "The Early Catastrophe" in the Spring 2003 issue of *American Educator*, available at www.aft.org/newspubs/periodicals/ae/spring2003/hart.cfm.

ensuring children’s growth in receptive and expressive vocabulary.⁶

- Gains in oral vocabulary development can predict growth in comprehension and later reading performance.⁷

This means that, in contrast to dire prognostications, there is much we can do to enable children to read and read well. Although we certainly have more to learn, the good news is that we now have an accumulated body of evidence on the characteristics of effective vocabulary instruction. And it turns out that this news couldn’t come at a better time.

Oral Vocabulary Development and the Common Core State Standards

You might say that we are entering into a new age of educational reform: the age of the Common Core State Standards (CCSS). In the distant past, education was a local issue; districts acted on their own to adopt instructional guidelines and curriculum. In recent years, however, education has increasingly become more of a state and even a federal concern. The No Child Left Behind Act, the Bush administration’s reauthorization of the Elementary and Secondary Education Act, increased the role of states in enacting standards, assessments, and accountability. In 2010, state governments took their turn, becoming more proactive in educational reform. The Council of Chief State School Officers and the National Governors Association, working with the organization Achieve, set out to develop world-class standards that would essentially create a shared vision of what all students should know and be able to do in all grades, kindergarten through high school.

The reason that this is relevant for those in early education on up is that 46 states and the District of Columbia have adopted these Common Core State Standards in English language arts and mathematics. The standards don’t define *how* teachers should teach, but they do tell them *what* students need to know and be able to do. Further, starting in 2014–2015, state tests will be geared toward measuring whether or not students are achieving these standards. In essence, education is moving toward a more unitary system with a shared vision of expectations for student learning.

These CCSS represent a sea change in how we think about early literacy and reading, in particular, even before children enter kindergarten and throughout the early grades.[†] Here, in a nutshell, are some of the design features:

- **A cumulative model of expectations:** It used to be called “spiraling,” but the principle is the same. From grade to grade, similar standards will increase in complexity. For example, in kindergarten, children will be expected to “ask and answer questions about key details in a text, with prompting and support.” Grade 1 has the same exact standard, although the children will now be required to do it on their own.
- **Informational texts:** Right from the start, the standards place greater emphasis on listening to and eventually reading informational books. In this respect, the standards focus on the

[†]For more on how the Common Core State Standards will transform English language arts instruction, see “Letting the Text Take Center Stage” in the Fall 2013 issue of *American Educator*, available at www.aft.org/pdfs/americaneducator/fall2013/Shanahan.pdf.

integration of knowledge and ideas through text. Further, there is the expectation that children will be able to cross traditional genre boundaries and compare and contrast text features; for example, children might listen to an informational book about insects one day and a story about insects the next day, and then be asked about the connections between the two. Children will be expected to learn about key subject areas, particularly science and history, through texts.

Certainly, this does not mean that we are going to abandon the children’s literature or stories that we all have come to know and love. Rather, it simply means a greater balance between literary storybooks and informational texts.

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- **Challenging materials:** There is greater emphasis on stretching students to meet the demands of reading harder text than before. In the past, we used to try to meet children’s needs by selecting reading materials according to their instructional level; in some cases, when they have difficulty comprehending text, we’ll even choose an easier text and have them gradually build up speed for more challenging materials. The CCSS use a very different model: children are required to read grade-level text. A teacher’s job will be to help them learn through these more challenging texts without telling them what the texts say. For example, a teacher might focus on the organizational features of the text, the headings and subheadings, or the use of the glossary to unlock the meaning of words in context.

- **An integrated model of literacy:** Although the standards are divided into reading, writing, speaking and listening, and language, there is an expectation that all of these skills work together. Even kindergartners are expected to engage in rich conversations that place a greater emphasis on their abilities to build arguments from evidence in the text, whether it is read to them or they read it themselves.
- **An integrated media environment:** There is a greater recognition that today’s “texts” don’t come through only one medium—print. As all of us know, a high volume of information comes through print and nonprint media forms, both old and new. The CCSS encourage teachers to make use of multimedia, as it’s embedded into every aspect of today’s curriculum. Children will need to be able to gather, comprehend, evaluate, and synthesize information and ideas through different forms of media.

Without vocabulary knowledge, words are just words—without much meaning.



In short, these standards focus on results rather than on means. They establish clear goals and expectations that are designed to help children succeed in a world in which the development of information capital is increasingly important. And whether they are ultimately successful in achieving these lofty goals depends on teachers and how well they are supported in implementing these new standards in the classroom.*

So how do the CCSS relate to oral vocabulary development? And, for those who work with preschoolers or even younger children, how do K–12 standards affect what they teach? Here’s why teachers need to be informed about these standards: it is

*For more on why teachers need proper training and support to implement the Common Core State Standards, and why these standards should be delinked from high-stakes testing, see “Common Core: Do What It Takes Before High Stakes,” by Randi Weingarten, available at www.huffingtonpost.com/randi-weingarten/common-core-do-what-it-ta_b_3300790.html.

impossible for children to read, and to understand what they read, without a strong foundation in oral vocabulary development. Without vocabulary knowledge, words are just words—without much meaning. If we are to help children take on seriously challenging texts, then we need to give them word and world knowledge to bring to these texts. Given that most oral vocabulary development grows from a massive immersion in the world of language, there is not a moment to waste.

The purpose of this article is to explain our rationale for content-rich oral vocabulary instruction in the age of the CCSS, and how to effectively build children’s vocabulary. But first, we dispel some of the common myths about oral vocabulary development, which have often led to a lack of attention for this important topic in school instruction. We then move to a set of instructional principles that should guide teachers’ work.

Common Myths

Like many myths, these notions may contain some partial truths, almost like folk wisdom. For example, some authorities once claimed that learning was based on the “neural ripening” of the brain; applied to reading, this reflected a philosophy of “wait and see” until the child appeared “ready” for instruction. Research and writings in the 1950s and 1960s by cognitive psychologists provided powerful evidence that early childhood was crucial in the cognitive development of an individual.⁸ This conclusion led to designing new opportunities to engage children in early learning.

Similarly, a number of myths have been perpetuated about oral vocabulary development, and in many ways they have stymied efforts to promote quality teaching early on. Recent evidence has called into question these notions, and it suggests that we not only can improve children’s vocabulary—we can *accelerate* it with instruction. These new findings have powerful implications for further reading development and content learning.

Myth 1: Children Are Word Sponges

Children seem to pick up words prodigiously and quite effortlessly. It looks natural. In one classic study, for example, researchers taught preschoolers a new color word simply by requesting, “You see those trays over there? Bring me the *chromium* tray. Not the red one, the *chromium* one.”⁹ When their memory for the new word was assessed one week later, the majority of children (63 percent) were able to correctly identify which color was chromium. Since this experiment, the term *fast mapping*—the notion that words can be learned based on a single exposure—has become common parlance to explain the extraordinary rate at which children seem to pick up words early on.

Today, however, there is ample evidence to suggest that children do not learn words through fast mapping.¹⁰ Rather, they learn words by predicting relationships between objects and sounds, which become more accurate over time. Word learning is incremental.¹¹ Evidence for this comes from children’s struggles to understand color words. Although infants can distinguish between basic color categories, it is not until about age 4 that they can accurately apply these individual color terms.¹² Typically, words such as *red* or *yellow* may appear in their vocabulary; however, their application of these words to their referents may be haphazard and interchangeable.

Children, then, may have knowledge of these words, but this knowledge will be far from complete. Rather, word learning in most cases requires many exposures over an extended period of time.¹³ With each additional exposure, the word may become incrementally closer to being fully learned.

Myth 2: There Is a Vocabulary Explosion

It is often said that word learning starts rather slowly, then at about 16 months or when a child learns about 50 words, all of a sudden things begin to happen.¹⁴ Word learning begins in earnest. Various called the “vocabulary explosion” or “word spurt,” it reflects the apparent dramatic ability of young children to acquire new words—on the scale of learning 10 or more new objects and names within a two- or three-week period. This notion of a vocabulary explosion may suggest that the optimal time for oral vocabulary development is in these toddler years.

Recent evidence, however, suggests that the “spurt” in word learning does not correspond to any change in the rate of word learning, but to a change in the rate of children’s integrating new vocabulary.¹⁵ In other words, it suggests that the vocabulary explosion is a byproduct of the variation in the time it takes to learn to actually use words. Although children are accumulating words at a constant rate, the written and verbal use of the words accelerates. We see, for example, a similar pattern with receptive and expressive language, with children demonstrating far greater capacity to understand meaning before they are able to effectively express ideas in words.

The course of word learning, therefore, has little to do with vocabulary explosions, bursts, or spurts. To the contrary, word learning is cumulative.¹⁶ The high-performing student who knows many thousands of words has learned them not by having received a jolt of oral language early on, but by accruing bits of word knowledge for each of the thousands of words encountered every day. By the end of high school, one estimate is that college-ready students will need to acquire about 80,000 words.¹⁷ This means that we should immerse students for extended periods in oral and written vocabulary experiences throughout their instructional years.

Myth 3: Storybook Reading Is Sufficient for Oral Vocabulary Development

Reading books aloud to children is a powerful and motivating source for vocabulary development.¹⁸ We now have a large corpus of research showing that children learn words through listening to and interacting with storybooks. Nevertheless, recent studies have begun to question whether incidental instruction through book reading may be substantial enough to significantly boost children’s oral vocabulary development.¹⁹ Several meta-analyses, for example, have reported only small to moderate effects of book reading on vocabulary development.²⁰ One group of researchers examined the added benefits of dialogic reading, an interactive reading strategy, on children’s vocabulary growth and reported only modest gains for 2- to 3-year-olds.²¹ Further, these effects were reduced to negligible levels when children were 4 to 5 years old or when they were at risk for language and literacy impairments.

This means that exposure to words through storybooks is not likely to be potent enough to narrow the substantial gap for

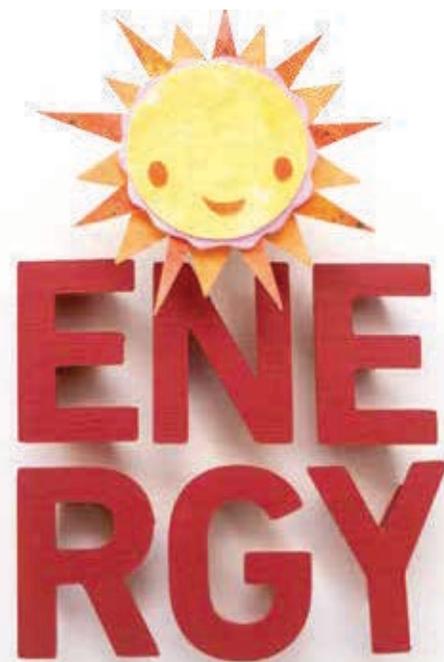
children who may be at risk for reading difficulties. Rather, to improve children’s oral vocabulary development, teachers will need to augment the read-aloud experience with more intentional strategies that require children to process words at deeper levels of understanding.

Myth 4: We Do It All the Time

Most teachers try to consciously engage children in active experiences that involve lots of conversation throughout the day. In the course of a science activity, for example, a teacher may explain a word to help children understand the context. She might pause during the lesson and say, “That’s the *predator*. That means he wants to eat the frog,” providing a brief explanation that fits the context of the story. Or during a classroom discussion, a teacher might use the word *celebrate* when describing a birthday activity and then explain, “*Celebrate* means to do something fun.” These events represent important teachable moments—informal opportunities to engage in word learning, somewhat parallel to the types of language exchanges between parents and their children.

However, over the course of the 20,000 hours parents and children spend together in the home *before* entering school, vocabulary words are likely to be repeated frequently. The problem is, teachers do not have that luxury. In our study of 55 kindergarten classrooms, for example, we found that although teachers provided more than eight of these word explanations per day, they were rarely, if ever, repeated more than once.²² Further, words selected for teachable moments were different

Children learn words by predicting relationships between objects and sounds.



across classroom settings. Far too predictably, our study reported that children who attended schools in the most severely low-income neighborhoods were likely to hear far fewer explanations, with those explanations offered at lower difficulty levels, than children in middle- and upper-income areas.

With the implementation of the CCSS, children will be expected to understand content-related words in science and history. This means that we cannot rely on teachable moments alone to help children develop word meanings. Rather, we will need to be proactive in selecting words that have greater application to academic texts with increasingly complex concepts.

Children given child-friendly definitions of words or other attributes of words to be learned are more likely to remember them.



Myth 5: Just Follow the Vocabulary Scope and Sequence in a Core Reading Program

Several years ago, researchers examined the prevalence of oral vocabulary instruction in core reading programs at the pre-K level.²³ We found a dearth of instructional guidance for teachers, despite some “mentioning” of words. Since then, we have turned our attention to kindergarten and first-grade materials, focusing on the four most commonly used core curricula, to examine the breadth and depth of oral vocabulary instruction—the pedagogical features of instruction and how these features might align with research-based evidence on vocabulary development.

Despite greater attention to words in elementary curricula, our results indicated tremendous disparity across curricula.²⁴ For example, one curriculum listed an average of 20 target vocabulary words per week to be taught, whereas another listed, on average, only two. Further, the criteria used to select words to teach remained a mystery. In one curriculum, words were selected based on the weekly stories. In other curricula, we could find no organizing principle for the selection of words at all. Finally, using

three different criteria, we found that many of the vocabulary words selected for instruction were far too easy to warrant school-based instruction.

This means that until such materials are developed, teachers are going to have to rely on a set of research-based principles to ensure that all students receive the quality of oral vocabulary instruction they need. In the age of the CCSS, students will need a specialized language—some describe it as academic language—to convey their ideas, which will facilitate the development of more complex concepts in multiple disciplines. And our efforts to enhance the ability of all children to communicate in academic language and academic thinking through oral vocabulary development must begin early.

Principles of Effective Oral Vocabulary Instruction

Although there is certainly more to learn, we now have a growing research consensus about the characteristics of effective vocabulary instruction. Using evidence from our two recent meta-analyses synthesizing research from 75 vocabulary studies,²⁵ as well as our own studies examining some of the mechanisms for word learning,²⁶ five principles emerge to enhance oral vocabulary development, as described below.

Principle 1: Children Need Both Explicit and Implicit Instruction

Children benefit from explicit instruction. That is, children who are given child-friendly definitions of words or other attributes of the words to be learned are more likely to remember them. Prior to the beginning of a story, for example, a teacher might begin by introducing several words that are integral to the story. The teacher might encourage children to listen for each of the “magic words” during the story reading and to raise their hands whenever they hear one.²⁷ Then the teacher might say to students, “Oh, good. Some of you raised your hands! What word did you hear? Yes, the word *peculiar*. When Anansi said the word *seven*, a peculiar thing happened. *Peculiar* means strange or different.”

Our syntheses of research reported that vocabulary gains were significantly higher when words were identified explicitly rather than implicitly (e.g., learning words by listening to a story). However, here’s something to keep in mind: the largest gains were made when teachers provided *both* explicit and implicit instruction. One study, for example, found that engaging children in acting out words after explicitly defining them enhanced word learning as measured by standardized assessments later on.²⁸ In other words, when teachers made children aware of the meaning of the words and then engaged them in using those words in a meaningful context, children achieved greater gains than from explicit instruction alone.

Principle 2: Be Intentional in Word Selection

Given that there are only so many words we can teach—for example, one estimate is a total of about 400 words in a year—we must carefully select the words that we plan to teach. Some have argued that words for vocabulary instruction should be selected from high-utility sophisticated words (known as Tier 2 words) that are characteristic of written language.²⁹ For example, instead of using the words *keep going*, you can use a Tier 2 word such as

maintain; instead of the word *lucky*, you might use the word *fortunate*. These words are domain general and are likely to relate to more refined labels for concepts that may enhance children’s verbal functioning. Studies of “Text Talk,” a strategy used to engage children in rich language instruction, have shown impressive results with kindergarten and first-grade children, demonstrating vocabulary gains about twice as large as those resulting from read-aloud studies.³⁰ Given this research-based evidence, the CCSS have adopted this heuristic for selecting words to teach.

However, our research suggests that it’s also important to consider content-related words very early on. These are words that will be critical for developing knowledge in key subject areas. For example, vocabulary related to living things, such as *habitat*, *organism*, and *protection*, can help children talk about and learn about key science-related concepts; moreover, science vocabulary words such as *compare*, *contrast*, *observe*, and *predict* are fundamental inquiry words used not only in science but in all subject areas. In our research, we found that Head Start preschoolers are highly capable of learning and retaining these and similar words over time. Introducing students to content-related vocabulary, therefore, helps them to build word knowledge and concepts essential for developing knowledge systematically from texts.

Principle 3: Build Word Meaning through Knowledge Networks

It’s fair to say that words represent the tip of the iceberg; underlying them is a set of emerging interconnections and concepts that these words represent. It is the rich network of concepts and facts accompanying these words that drives children’s comprehension.³¹ Thus, helping children to learn about words in clusters that represent knowledge networks has been shown to strongly support children’s inferential reasoning and comprehension. For example, if you know the word *oar*, you probably also know something about rowboats and paddling. Teaching words in categories, such as “healthy foods” (e.g., *fruit*, *vegetable*, *protein*), also aids in the retention of these words.

Recent evidence for the support of teaching words in knowledge networks comes from two large-scale studies of vocabulary interventions for low-income preschoolers. One study, for example, used a number of useful strategies to help children share semantic similarities between words.³² Strategies such as encouraging children to look at two picture cards with words on them and make inferences about how these words work together helped them make comparisons of concepts. In our World of Words curriculum, we teach words related to a semantic category. For example, children learn words associated with “parts of the body,” such as *abdomen*, *lungs*, *heart*, and *brain*, while focusing on the common features of the category (e.g., “parts of the body” means these are attached to the body).³³ We then engage children in playful activities called “time for a challenge” and ask them questions such as, “Are eyeglasses part of the body?” or “Is hair part of the body?” (Some children argue that hair is not part of the body because their daddies are bald!)

We found that clustering words within categories facilitated children’s comprehension and provided promising evidence of accelerating word learning. For example, we showed a picture of a word not taught—in this case, *ankle*—and asked, “Is an ankle

a part of the body?” Children who received instruction reported, “Yes, because it helps you walk,” whereas a comparison child not receiving instruction just said, “Yes, ‘cause.” Similarly, children who received our vocabulary curriculum were able to apply their categorical information to new words, suggesting that they were using the semantic information about categories to make inferences and generalizations. Finally, helping children understand how words build knowledge networks facilitates our ability to make teaching them more meaningful. This represents a far cry from our analysis of vocabulary in core curricula in which a teacher might be guided to teach the words *platypus* and *around* on the same day.³⁴ Rather, children learn best when words are presented in integrated contexts that make sense to them. A set of words connected to a category such as “energy” can help children remember not only the words themselves but the linkages in meaning between them.



There are only so many words we can teach each year, so we must carefully select the words that we plan to teach.

Principle 4: Children Need Repeated Exposure to Gain Vocabulary

Children are most likely to learn the words they hear the most. Findings from a large number of correlational studies on language have shown that frequency of exposure strongly predicts word learning and seems to have long-range consequences for later language and reading levels.³⁵ Although this finding is often mentioned in the literature, what is new is that we may have underestimated the frequency required to learn words. For example, in attempting to better understand how many repetitions might be needed to learn a novel word, researchers studied 60 4-year-olds during a word-learning task.³⁶ First, the researchers identified a pseudo-word (e.g., *toma*) for the children, and then they engaged in playing a game involving the word, followed

by a brief assessment. For each word, 12 children heard the new word repeated three times; another 12 children heard the word repeated six times; and so forth, for nine, 18, and 24 repetitions. Only 20 percent of the children who heard a new word three times remembered it; in fact, it wasn't until after 24 repetitions that the majority of children (80 percent) successfully remembered the word.

The point, of course, is not that all words need 24 repetitions. However, this research does suggest that children need many more encounters with new words than we may have previously suspected. Strategies such as repeated reading have been shown to be effective in helping children acquire new words. In addition, children may benefit from rich explanations of newly encountered words. Rich explanations often include as much information as possible about the new word, including information conveyed through defining, providing synonyms, pointing to illustrations,

Frequency of exposure in a variety of meaningful contexts over an extended period of time enhances word learning.



and using the words in other contexts. These explanations can also give teachers further opportunities to repeat new words, thereby providing children with additional exposures. Another way to build repetition actually goes back to our previous point of teaching knowledge networks. Categories and semantic clusters provide a built-in mechanism for repeating words in meaningful contexts.

At the same time, it is also important for teachers to expose children to additional contexts in which the word might be used. Two researchers, in their work with second language learners, suggest that multimedia can be highly effective for enhancing the meanings of words.³⁷ Their research showed that multimedia-enhanced instruction significantly narrowed the gap between English language learners and non-ELL children in knowledge of targeted words. They found that video could help children learn by representing words in more than one media format, clarifying the instructional dialogue and adding more information to make sense of words that they are learning. Our research, as well, has shown that the addition of dynamic visuals and sounds in video accompanied by informational books provides children with multiple strategies for acquiring word knowledge. Together, this research highlights that frequency of exposure in a variety of meaningful contexts over an extended period of time enhances word learning. Further, children may continue to benefit from additional exposures to a word and its meaning even if they appear to already understand the word.

Principle 5: Ongoing Professional Development Is Essential

The results of our meta-analyses suggest that children's oral vocabulary development is highly malleable and can be significantly improved through intervention. However, these analyses also showed that teachers who have not received adequate preparation and teachers with limited educational backgrounds were not as effective in helping children make significant gains in vocabulary. Similar findings have been reported in other meta-analyses.³⁸ This research highlights the importance of ongoing professional development for teachers and other school staff who regularly work with children who might need additional instruction.



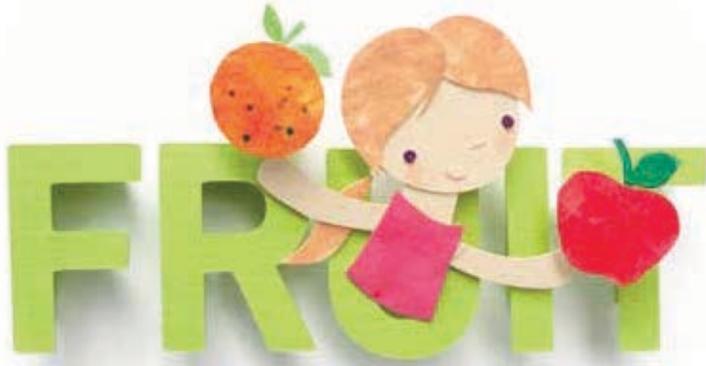
Very recently, we have drawn from our work with young children the notion of an instructional regime as part of a teacher's ongoing work in the classroom. This pattern of instruction involves several key steps:

- Identifying words that need to be taught;
- Defining these words in a child-friendly way;
- Contextualizing words into varied and meaningful formats;
- Reviewing words to ensure sustainability over time; and
- Monitoring children's progress and reteaching if necessary.

This instructional regime, applied at any grade level, promotes greater attention to the depth of processing words and their meanings, and can provide a critical road map for the future planning of instruction.

Taken collectively, the five principles of oral vocabulary development, in effect, highlight an approach that is designed to help children unlock the complexities of texts that we see throughout the CCSS. Given that these standards place greater emphasis on students' abilities to build arguments from evidence in texts, these instructional principles will give them the tools to engage in academically enriching conversations that can be fulfilling and highly rewarding.

Common myths are often based on some partial truths that have since been debunked or at least shown to have serious flaws



Recent evidence indicates that children need planned, sequenced, and systematic vocabulary instruction.

in their logic. This is the case with oral vocabulary development. In the past, we have often described young children as “word wizards,” “word sponges,” “lexical vacuum cleaners”—all denoting the supposedly easy process of vocabulary development. Too often, it has been assumed that word learning is natural and that the conditions in classrooms provide spontaneous opportunities for vocabulary development.

Teachable moments are important; however, they will not be sufficient for students to engage in complex texts. Rather, we will have to be much more strategic about word learning than our previous standards or instructional guidelines have acknowledged. Recent evidence indicates that children need planned, sequenced, and systematic vocabulary instruction. This means selecting words, concepts, and ideas that matter most to children right from the very beginning of schooling. Many children from high-poverty circumstances will have had fewer experiences with the academic language that the standards require. Children who enter school in these situations will need skillfully developed instruction that not only improves their word knowledge and concepts, but actually accelerates their vocabulary development, maximizing the limited time they have in school. □

Endnotes

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Evidence of Student Learning

In the past six years, we have had opportunities to test our approach to vocabulary learning in many different settings, and with children who come from low-income communities, many of whom are English language learners. Here, we highlight some of what we've learned, and why it is so important to focus on content-rich instruction.

In all, we have studied vocabulary learning with more than 2,000 children. We've conducted design studies in an attempt to understand the active ingredients of high-quality instruction, as well as randomized controlled trials examining the impact of interventions. We've looked at vocabulary learning in the home and in school, and the environmental supports that are typical for young children. From these studies, we can summarize the following points:

- Children from low-socioeconomic circumstances are not receiving the type of language supports they will need to achieve the standards in the Common Core—in the home or in school. Children who have limited opportunities for academic language learning in the home most often go to schools with similar limited opportunities.*
- Early literacy instruction in many classrooms in low-income communities has been reduced to the basic skills of

learning letters and sounds, with very limited time devoted to content instruction. With little time devoted to science and social studies, children will not develop the background skills needed for comprehending text.

- Despite calls for increasing the amount of informational text reading, little time is spent on it in classroom instruction.
- English language learners often go unnoticed and are not receiving the language supports early on in school that they will need to become successful.†

Together, these findings suggest that if we do not provide more targeted instruction in vocabulary in ways that help children build knowledge networks, children are likely to struggle to meet those Common Core standards that emphasize the importance of integrating knowledge and ideas in texts, making arguments based on evidence, and analyzing similarities and differences among texts.

To better understand effective vocabulary instruction, we focus on what children are capable of when given the opportunity to learn in content-rich settings. In a randomized controlled experiment (generally considered the “gold standard” of research), we examined how a yearlong program of content-rich instruction might

compare with the typical day-to-day curriculum in 24 Head Start classrooms in a high-poverty urban area severely affected by the recent economic recession. Classrooms were evenly divided into treatment and control groups, with the treatment group participating in a 12-minute, four-day-per-week program of content-rich vocabulary instruction.

However, in addition to this traditional experimental design, we raised another question. We reasoned that it was not simply enough to compare two similar groups of students; rather, we needed to understand if content-rich instruction might “level the playing field” by helping low-income and language-minority children reach the same standards and skills that middle- and upper-middle-income children have when they enter school. In other words, could high-quality vocabulary instruction early on improve the odds that children would come to school with the vocabulary and conceptual skills that are essential to ensure they are ready to learn?

To answer this question, we measured children's progress from two additional groups: a sample of middle-class children in a state-related preschool program and a sample of children from a university-based program, where more than half the children's parents were PhD students or faculty. In total, we measured more than 1,200 3- and 4-year-old children's progress in vocabulary and conceptual knowledge over a year's time. In addition, we then came back half a year later to see if the gains were sustained.

*See Tanya S. Wright and Susan B. Neuman, “Vocabulary Instruction in Commonly Used Kindergarten Core Reading Curricula,” *Elementary School Journal* 113 (2013): 386–408.

†For more on instructional supports for young English language learners, see “Dual Language Learners: Effective Instruction in Early Childhood,” in the Summer 2013 issue of *American Educator*, available at www.aft.org/pdfs/americaneducator/summer2013/Goldenberg_Hicks_Lit.pdf.

FIGURE 1:
Growth in Children's Vocabulary

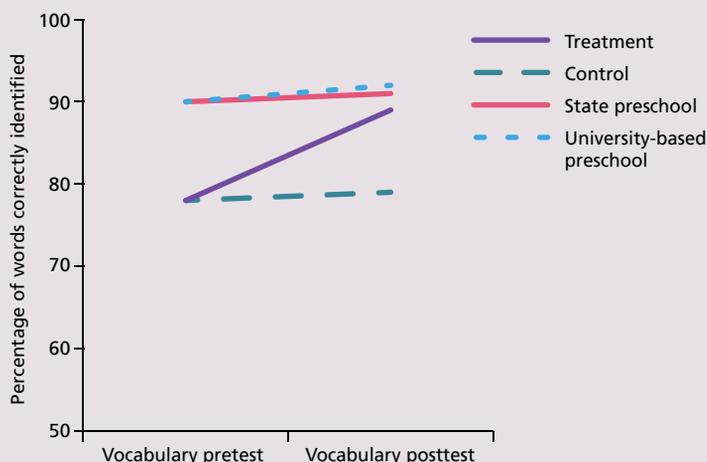
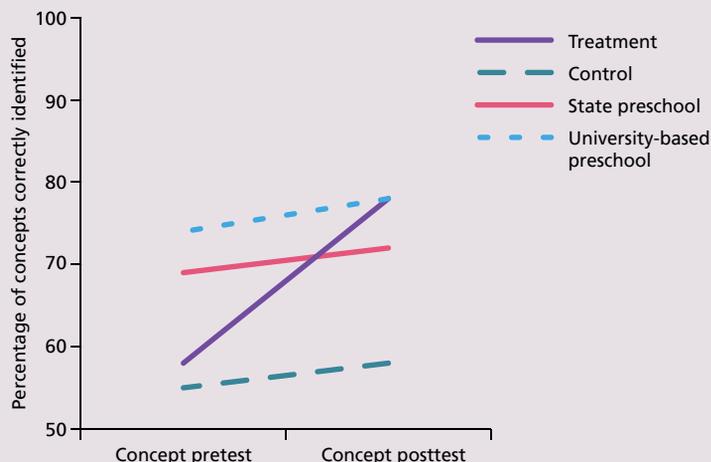


FIGURE 2:
Growth in Children's Conceptual Knowledge



Using assessments designed to measure young children's growth in vocabulary and content knowledge, Figure 1 tells a compelling story. It shows that, by the middle of the year, we began to see dramatic gains for children in the treatment group compared with those of the control group, which remained rather stable. More interesting, however, was that as the words got harder, the children did better, so that by the end of the year, there was no statistical difference between the treatment children and the middle- and upper-middle-class children.

Now let's take a look at children's conceptual development. This is an area that is often not considered in the early years, yet it is central to children's developing comprehension. As Figure 2 shows, the scores of the Head Start treatment group even exceeded those of the middle-class children by midyear, and were statistically on par with the upper-middle-class children at both the middle and the end of the year. In other words, children in the treatment group were engaged in using similar abstract language skills and concepts that their more economically advantaged peers were using as these children were about to enter kindergarten.

When we looked at the differences between native English speakers and second language learners, we found some interesting and very relevant results. Our assessments indicated significant growth in vocabulary and conceptual knowledge for both native and second language learners, as Figure 3 shows. However, for those in the control group, their understandings of conceptual categories throughout the year actually went down. These findings suggest that in settings

where the language is not comprehensible and no effort is made to help these children learn concepts, second language learners' growth in concepts is stymied.

Finally, we were curious about transfer: whether children who develop conceptual knowledge in some topics can apply their understanding to an entirely new topic. In particular, we were interested in whether our content-rich instruction supported children's *self-learning*. In this extension task, children were introduced to six unfamiliar objects, half of which were

the object possessed certain category properties (e.g., "Can you use a vise to make things?").

As Figure 4 shows, we found that the children in our treatment group were significantly more able to make connections to concepts and to extend their learning to a topic that they were less familiar with. In other words, good-quality instruction, structured in a way that allows children to begin to make knowledge networks, helps them think more conceptually. In this example, children were able to use their

We must provide more targeted instruction in vocabulary in ways that help children build knowledge networks.

tested with a category-related property (e.g., "Can you use a backhoe to make things?"), while the remaining objects were tested using an unrelated property (e.g., "Can you use a backhoe to count?"). Children completed three steps for each of the six unfamiliar objects. First, they were asked to identify the target object from a set of three pictures; this step helped ensure that the object was, in fact, unfamiliar. Children were next told the name of the target object and its category membership (e.g., "This is a vise. It's a tool."). Third, children were asked whether

existing knowledge for self-teaching purposes. Children's conceptual knowledge appeared to bootstrap their ability to (1) determine the meaning of unfamiliar words, and (2) figure out how these unfamiliar objects related to a larger category. Consequently, with this type of targeted instruction, these children not only made educationally meaningful gains, they achieved at levels consistent with those of more economically advantaged children. This suggests, quite simply, that we have just begun to tap these children's potential.

—S.B.N. and T.S.W.

FIGURE 3:
Overall Growth in Vocabulary and Conceptual Knowledge

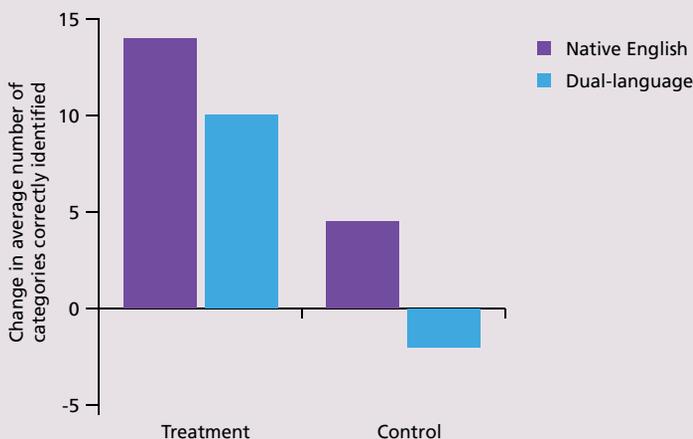


FIGURE 4:
Children's Ability to Transfer Categorical Knowledge to New Words

