



Putting the Pieces of the Puzzle Together

How Systematic Vocabulary Instruction and Expanded Learning Time Can Address the Literacy Gap

Claire E. White and James S. Kim, Harvard Graduate School of Education May 2009



Putting the Pieces of the Puzzle Together

How Systematic Vocabulary Instruction and Expanded
Learning Time Can Address the Literacy Gap

Claire E. White and James S. Kim, Harvard Graduate School of Education May 2009

The Center for American Progress would like to thank the William and Flora Hewlett Foundation for its generous support for this paper.

Introduction and summary

The research on expanded learning time in school has shown that time spent beyond the traditional school day can play an important role in influencing student achievement by providing students with additional time to master certain skills and topics and to expose them to enriching activities. Expanded learning time policies that implement systematic vocabulary instruction can be especially beneficial for struggling readers and writers. Vocabulary knowledge has been identified as the most important indicator of oral language proficiency, which is particularly important for the comprehension of both spoken and written language.¹ Moreover, general vocabulary knowledge is the single best predictor of reading comprehension. The interdependence of word knowledge and reading comprehension increases as students advance through school.²

Unfortunately, many low-income children and English language learners have limited word knowledge, which negatively affects their reading comprehension in the upper elementary and middle school grades.³ As early as the first grade, children from higher-income families know at least twice as many words as children from less affluent families.⁴ As students advance in grade level, the materials they read become more difficult, and students who lack academic language can neither access nor comprehend these texts. We have only to consider the typical high-poverty school, where approximately half of incoming ninth-grade students read two or three years below grade level.⁵

In addition, children who are learning English often enter kindergarten lagging behind their English-only peers in the skills necessary to start reading, with the gap remaining throughout their school years. For English language learners in particular, the traditional school schedule often fails to provide enough opportunities for them to catch up.

So how can policymakers and practitioners address disparities in vocabulary and spoken language based on children's family income and English-language proficiency? We will address this question with three recommendations:

(1) To close the literacy gap in the elementary and middle grades, schools should consider using systematic vocabulary instruction throughout the school day and during expanded learning time. Lower-income children who need preparation in academic language and exposure to texts that promote academic vocabulary are not getting enough

of either type of instruction. Explicit vocabulary instruction rarely occurs in schools, and when it does it appears to be insufficient for promoting word growth and increased comprehension of text.⁶

Our primary recommendation is for educators and educational leadership to provide school-wide systematic vocabulary instruction for low-income children and English language learners. This is not a new idea: During the War on Poverty in the 1960s, there were calls for systematic instruction in vocabulary for disadvantaged students as one of the mechanisms for increasing academic achievement.⁷

As late as the fifth grade, children learn almost 80 percent of new words as a result of direct explanation, usually by a teacher.⁸ This is good news because it underscores the effectiveness of teacher-directed instruction in improving vocabulary and comprehension. Interventions that specifically target vocabulary learning have shown promising results for at-risk children and should be a primary component of expanded learning time.

Because of time constraints during the traditional school day, many literacy blocks tend to promote *some* of the skills associated with early reading over others. Skills such as phonological awareness and decoding are vital for reading comprehension, but vocabulary knowledge and familiarity with text structures are crucial as well. It may be accurate to claim that a great part of the achievement gap is in fact a vocabulary gap. This gap, we argue, can be narrowed through more time spent on developing this crucial language base.

(2) To implement systematic vocabulary instruction, educators need to accomplish three goals: sustain a school-wide vocabulary program, assess student knowledge, and help teachers target the right words during instruction. By optimally using extended learning time to accelerate effective vocabulary and academic language instruction, teachers can help all students at all grade levels develop the kinds of language skills crucial to academic success.

- There is a need to focus on creating and sustaining a school-wide approach to systematic vocabulary instruction—with features known to work—while simultaneously expanding instructional time. Designing and implementing an effective language intervention that crosses grade levels is a challenging enterprise in underperforming schools with low levels of academic achievement and incoherent organizational structures.⁹ Interventions work best if they initially receive wide support by leadership and practitioners and clearly address a district, school-identified, or nominated concern.¹⁰ If limited vocabulary knowledge has been identified by district leaders as an impediment to children's reading abilities and access to content area texts, that consensus allows for a targeted and thoughtful approach to the challenge at hand.

- Assessing vocabulary knowledge is crucial to targeting the words children need to know to do well in school. There are written and oral vocabulary measures that provide some meaningful evaluation of a child’s vocabulary. But written vocabulary assessments are limited because they measure word knowledge through reading comprehension assessments or target words that do not give a real picture of the breadth and depth of a child’s actual vocabulary. In the case of designing programs or interventions, assessing students’ vocabulary knowledge must be closely linked to each school’s instructional and curricular goals.
- Educators are not in the position to teach the sheer number of words struggling readers need to know to access school texts, participate in academically productive discussions, or produce academic writing. Therefore, it is paramount to target the kinds of words that students are likely to encounter in textbooks and on tests and explicitly teach these across content areas.

(3) Expanded learning time policies may enhance systematic vocabulary instruction’s effectiveness for low-income children and English language learners.¹¹ It is clear that we need more planned curricula, more vocabulary learning and teaching, and more time to do both—especially for children attending high-poverty schools. Embedding systematic vocabulary and literacy instruction in high-poverty schools that expand learning time holds significant promise for closing literacy gaps.

Although there are few studies that specifically examine the effects of systematic vocabulary instruction within an expanded learning time policy, research suggests that such an approach would accelerate the vocabulary and comprehension gains of struggling readers.

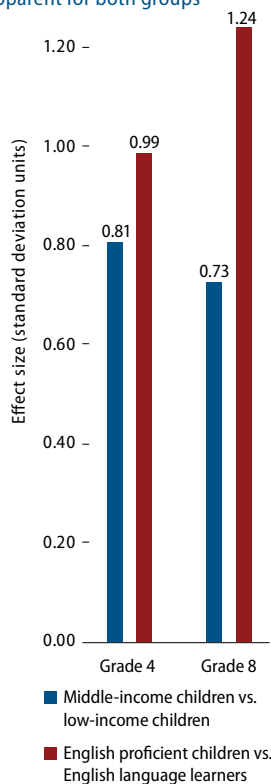
Recent evaluations of systematic vocabulary instruction during the regular school day have produced positive impacts on children’s vocabulary, comprehension, and writing skills. It is therefore reasonable for us to assume that implementing systematic vocabulary instruction in an expanded learning time curriculum would have equally positive effects on student outcomes. Our review of three studies in this report suggests that even expanded learning time policies that provide systematic literacy instruction in the early grades have clear benefits for low-income children and English language learners.

The powerful combination of systematic vocabulary instruction and expanded learning time has the potential to address the large and long-standing literacy gaps in U.S. public schools. But ultimately, evidence from a rigorous experimental study is needed to determine whether the combination of systematic vocabulary instruction and expanded learning time could help close and eliminate literacy gaps.

Part I: The nature of the problem

Achievement gap on the 2007 NAEP grade 4 and grade 8 reading test by family income and English language learner status

The literacy gap's magnitude is apparent for both groups



Source: National Center for Education Statistics. NAEP Data Explorer: <http://nces.ed.gov/nationsreportcard/naepdata/>

In the upper elementary and middle grades, many low-income children and English language learners lack the literacy skills to succeed in school and to read grade-level texts. In fourth and eighth grade, there is clear evidence that low-income children and English language learners perform significantly worse on standardized reading comprehension tests compared to middle-income children and English-proficient children.

For instance, a 2007 report from the National Center for Education Statistics, or NCES, found that 70 percent of English language learners, or ELLs, in fourth and eighth grade scored below basic in their reading ability as measured by the National Assessment of Educational Progress, or NAEP.¹² Figure 1 displays the literacy gap's magnitude on the 2007 NAEP for Grades 4 and 8.

In both grades, middle-income children (i.e., not eligible for free lunch) scored nearly three-fourths of a standard deviation higher than low-income children. In addition, English-proficient children also scored a full standard deviation higher than English language learners. These gaps imply that on average, low-income children and English language learners scored in the bottom quartile on the Grade 4 and 8 NAEP reading tests.¹³

This literacy gap is rooted in children's early experiences at home and at school. Both the quality of children's oral language experiences at home and the quality of vocabulary instruction in school have lasting consequences that contribute to the gap.

Home factors

Young children from different socioeconomic groups come to school with dramatically different listening vocabularies: Low-income children enter kindergarten with 3,000 words, while children from middle-class families may enter with a vocabulary of 20,000 words.¹⁴ Comparisons across socioeconomic groups show that less-educated parents tend to talk less and use a less-varied vocabulary with their children.¹⁵

This lack of vocabulary can be a detriment because talking to children is crucial for developing language and is a major precursor to literacy.¹⁶ Studies have found that parents from middle- and upper-class families not only talk more frequently to their children,

but provide them with the kinds of interactions that promote school-valued and literate behaviors.¹⁷ These kinds of language interactions provide children with opportunities to become familiar with the language of school texts and also predict vocabulary growth and future academic outcomes.¹⁸

By age 3, children from professional families have larger vocabularies than children from working-class and welfare families. Table 1 displays data from Betty Hart and Todd Risley’s study on the quantity and quality of words used in the homes of children from different social and economic backgrounds.¹⁹ By age 3, the recorded vocabulary size of children from professional families (average 1,116 words) is substantially larger than for children from working-class (average 749 words) and welfare families (average 525). On average, children from professional families also hear more new words per hour than children from less-advantaged families.

Averages for measures of parent and child language and test scores

By age 3, the recorded vocabulary size of children from professional families is substantially larger than for children from working-class and welfare families

Measures and scores	13 Professional		23 Working-class		6 Welfare	
	Parent	Child	Parent	Child	Parent	Child
Pretest score	41		31		14	
IQ score at age 3		117		107		79
Recorded vocabulary size (age 3 for child)	2,176	1,116	1,498	749	974	525
Average utterances per hour	487	310	301	223	176	168
Average different words per hours	382	297	251	216	167	149

Source: Hart and Risley (2003), p. 176

By age 4, these early deficits in vocabulary size have accumulated a 30 million-word gap in word exposure between children in professional (45 million words) and welfare families (13 million). In fact, children in professional families have heard almost as many words by age 1 (11.2 million) as children in welfare families have heard by age 4 (13 million).

If one considers the challenges facing English language learners who enter school with limited or no English at all, these statistics are even more sobering. English language learners are “school dependent” for English language development, and so the quantity and quality of exposure to rich and abundant language in school is absolutely essential. This makes it imperative for expanded learning time to be spent on language development for these vulnerable groups.

It’s also not surprising that early deficits in oral language can translate into later deficits in reading comprehension. One longitudinal study showed that oral language skills developed by children at the age of 4½ predicted their word reading in the first grade as well as reading comprehension in the third grade.²⁰ And seminal studies have shown that

low-income children’s reading scores diverge from those of middle class-children after the primary grades. This “fourth-grade slump” appears to occur for low-income children because they are unfamiliar with the linguistic and cognitive demands of texts, which grow after the third grade. After that point language increasingly becomes more decontextualized, abstract, technical, and literary as children progress through school.²¹

But let’s pause for a minute and explain what we mean by “oral language” and its relationship to reading achievement. It is important to define oral language (and its connection to reading) beyond what we term “vocabulary knowledge.” Oral language is vocabulary knowledge (knowing a lot of important words), but it also involves familiarity with the kind of syntax found in texts (which children get from being read to), deep word knowledge of how words can have multiple meanings (the word “draft” is a good example), and familiarity with the different kinds of narrative discourse processes (how information is set up and organized, which is different for literature than for science).²²

Unfortunately, many policymakers, administrators, and teachers alike are unaware of the complexity of language development and its critical role in early and later reading and writing success. Even worse, these skills are rarely explicitly taught in high-poverty schools.

Interventions designed to promote oral language development for reading and academic achievement must therefore be rooted in an understanding of the language and textual demands of grade-level content. This in turn would result in more targeted support for the particular needs of low-income children and English language learners. Rich language environments at school—especially with more time devoted to building this foundation—can promote the kind of language skills that low-income children need to become better readers, successful students, and members of an informed and working citizenry.

School factors

It is regrettable that schools often fail to provide instruction that helps low-income children and English language learners acquire the word knowledge to comprehend grade-level texts.

Results from the national Reading First Impact Study underscore the need for more direct and explicit vocabulary instruction. Although the Reading First legislation encouraged schools to implement scientifically based reading instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension, the national evaluation of Reading First indicated that teachers spent more time on phonics and comprehension than on vocabulary instruction in both first and second grade.²³ Thus, a first step toward addressing the vocabulary gap is to consider some principles to increase the quantity and quality of vocabulary instruction from kindergarten to eighth grade during the regular school day and during expanded learning time.

Teachers in high-poverty schools often report having limited experience and expertise in successfully teaching vocabulary and academic language to these very students. A review of the content covered in teacher education programs highlights the limited opportunities pre-service candidates are given to develop knowledge about language teaching and learning.²⁴ In other words, lower-income children who need preparation in academic language and exposure to the kinds of texts that promote academic vocabulary are not getting much of either type of instruction in their classrooms. Explicit vocabulary instruction rarely occurs in schools, and when it does, it appears to be insufficient for promoting word growth and increased comprehension of text.²⁵ Case in point: One study showed that explicit instruction of vocabulary in the third, fourth, and fifth grades occurred on average for 1.67 minutes a day, or about 100 seconds of vocabulary instruction.²⁶

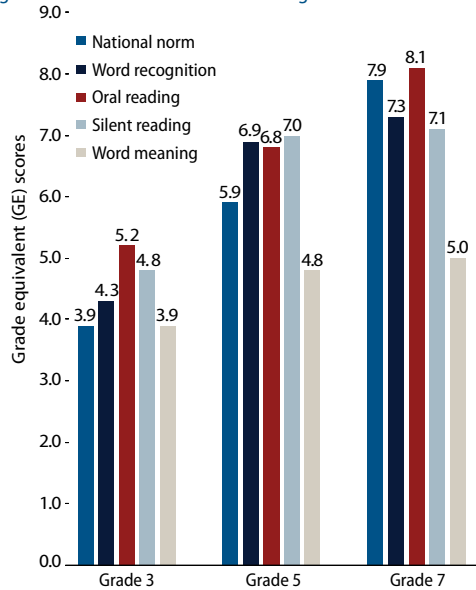
Low-income students consistently have less access in school to high-quality conversation and reading materials than do middle-class students. Research focusing on teacher dialogue and availability of classroom materials in low-income first-grade classrooms found that teachers spent less than four minutes a day engaging their students with informational texts (kids' newspapers, *National Geographic* articles on volcanoes or snakes), as these were often unavailable. These informational texts are rich in academic language and content-area vocabulary and provide obvious vehicles for enhancing classroom discussion, developing background and world knowledge, and increasing vocabulary. Providing more time and opportunities for less-advantaged students to read or be read to (especially for English language learners) during the school day and as an integral part of ELT would be a critical support for increasing language and literacy across the grade levels.

These limited opportunities to acquire academic vocabulary contribute to the fourth-grade slump in reading among many low-income children. It appears that the transition from “learning to read to reading to learn” is more difficult for children who are unfamiliar with the language of later-grade texts, which is increasingly abstract and offers little in the way of contextual support. These readers need more systematic vocabulary instruction and more background information to deal with unknown words and concepts as they progress into the later grades.²⁷ In *The Reading Crisis: Why Poor Children Fall Behind*, Jeanne Chall, Vicki Jacobs, and Luke Baldwin found that low-income children fell behind most rapidly on tests of word meaning (i.e., vocabulary).²⁸ To highlight this point, the authors reported the reading scores of low-income children assessed in Grades 3, 5, and 7.

In Chall's study, low-income children were scoring at or above national norms on third-grade tests. The first set of bars in Figure 2 shows the mean grade equivalent score at the end of third grade. At the end of third grade, the mean Grade Equivalent, or GE, score on all four reading tests was at or above 3.9, which represents the average score for children in the ninth month of third grade. In other words, the children were reading at grade level on measures of word reading, oral reading, silent reading comprehension, and word meaning. However, by the end of fifth grade, these children were already a grade level behind in

Mean reading scores in Grade Equivalents for a sample of low-income children in Grades 3, 5, and 7

By the end of fifth grade, low-income children are already a grade level behind in word meaning



Source: Chall, Jacobs, and Baldwin (1990), p. 31

word meaning (GE = 4.8). And by seventh grade, the mean score on word knowledge was 5.0 GEs and nearly three grade equivalents below the national norm of 7.9 GEs.

The decline in vocabulary scores may underlie the difficulties that low-income children and English language learners confront on standardized tests of reading comprehension in the upper elementary and middle-school grades. It may be safe to say that a great part of the literacy gap on assessments such as NAEP is in fact a vocabulary gap. Children can appear to be good readers because they are able to decode words, but they are unable to answer comprehension questions. This is because they have not learned or been taught the kinds of words that are essential for understanding texts and tests.

In Part II we will address the question of what schools can do to close these large achievement gaps in reading.

Part II: Three principles of systematic vocabulary instruction

Low-income students and English language learners need ample opportunities to learn new words across grade levels and content areas. Adopting a school-wide vocabulary program implemented during the regular school day and during expanded learning time is critical to addressing the literacy gap.

There are three best practices for systematic vocabulary instruction that can enhance the performance of struggling readers.

Systematic vocabulary instruction requires school-wide coordination

The left column of Table 2 summarizes best practices of school-wide instruction. Systematic vocabulary instruction delivered by elementary teachers and by science, social studies, and math teachers in the middle grades can help accelerate the acquisition of new words. Over time, instruction across content areas can have a cumulative effect on prior gains in vocabulary and reading comprehension that may slip without constant reinforcement.

These best practices, however, are rarely observed in schools. As described in the right column of Table 2, vocabulary instruction is typically restricted to English language arts, or ELA, classroom teachers, who are chiefly responsible for implementing vocabulary programs. As a result, common school practices limit the amount of instructional time devoted to vocabulary instruction and are unlikely to accelerate the word knowledge of disadvantaged children.

Systematic vocabulary instruction should be school-wide for a number of reasons. First, the instruction must be school-wide if children of all ages are to be routinely and uniformly exposed to the kind of language they need to become successful readers and writers. Since it takes up to 12 encounters with a word to reliably learn it, children need multiple exposures to academic language and vocabulary (across the domains of speaking, listening, reading, and writing).²⁹

Best practices for school-wide instruction

Common practices are more widely used

Best practices	Common practices
Practitioners adopt a school-wide vocabulary curriculum	Practitioners emphasize vocabulary during English Language Arts, or (ELA) class
Vocabulary taught by all content area teachers	Vocabulary restricted to ELA teachers
School day instruction coordinated with expanded learning time	Instruction provided only by ELA teachers during regular school day

Second, systematic vocabulary instruction can help children learn a word’s often multiple meanings and understand how a word’s meaning can change in different contexts or how it is used in a particular subject matter area. And finally, more time to acquire vocabulary is especially critical for English language learners and low-income children. Many English language learners come to school with limited English and in some cases with no English at all. If low-income children are behind their non-poor counterparts, low-income ELLs present an even more dramatic scenario. Native English speakers typically know at least 5,000 to 7,000 words at school entry and so English learners not only must close that initial gap but also keep pace with the native speakers. To do this, they must steadily expand their vocabularies.³⁰

In short, a school-wide plan for vocabulary instruction is more effective than one restricted to English language arts classrooms.

Systematic vocabulary instruction requires better measures of students’ word knowledge

The left column of Table 3 summarizes best practices in measuring vocabulary. These best practices include assessment of high-leverage words that are crucial for understanding academic text (e.g., history and science textbooks). Given their importance in the school curriculum, high-leverage words should be assessed at the beginning and the end of the school year. In addition, good measurement examines children’s ability to use words in their writing. Finally, the assessment results should be routinely discussed and shared among all content area teachers.

More common, however, are the practices found in the right column of Table 3. These include the use of a single standardized test score from a silent reading comprehension test. Moreover, summative measures are typically only shared with ELA teachers. These practices do little to inform other teachers about their students’ understanding of vocabulary found across content areas. As a result, it is difficult to understand the specific weaknesses that need to be addressed through instruction.

Best practices for measuring vocabulary knowledge

Common practices are more widely used

Best practices	Common practices
Pre- and post-assessment of high-leverage words in curriculum	Use of end-of-year standardized tests on comprehension tests
Measure vocabulary directly two or more times a year	Measure vocabulary indirectly through end-of-year state reading tests
Assess word use in writing	No writing assessment
Results shared with all teachers	Results shared only with ELA teachers

Common measures of vocabulary may not inform effective instruction for several reasons. Teachers often teach words that students already know or teach words that are disconnected from the school curriculum or content-area texts. A few written and oral vocabulary measures provide some meaningful evaluation of a learner’s word knowledge base. But written vocabulary assessments are limited because they measure word knowledge through reading comprehension assessments or target words that do not give a real window on a child’s actual vocabulary.

The vocabulary gap that exists between low- and high-achieving students can be narrowed by selecting words for instruction—and assessments—in a more targeted and purposeful manner.³¹ These include choosing: (a) words that are unknown to students; (b) words that are related thematically; (c) morphological families; and (d) words that appear in a variety of different and rich textual contexts.³² In the case of designing vocabulary programs or interventions, assessing students’ vocabulary knowledge must be closely linked to each school’s instructional and curricular goals.

It is difficult to measure children’s word knowledge because vocabulary assessments in the upper grades tend to be disconnected from the actual curriculum and content area texts children are supposed to master. Teachers also must be aware of the level of vocabulary knowledge of their students—especially at the secondary level—in order for them to teach the language associated with the content areas as well as the language that crosses subject matter.

In short, diagnostic measures of children’s vocabulary are a prerequisite for effective instruction.

Helping teachers target the right words during instruction

The left column in Table 4 highlights some best practices in vocabulary instruction in the elementary and middle grades. First, high-leverage target words should be embedded in the school’s curriculum and in accompanying texts; in other words, word study should be an integral part of the school’s curricular goals. The more common practice, however, is to teach isolated words often detached from a school’s curriculum and those that infrequently occur in texts but have none of the attributes of high-leverage, all-purpose words. For instance, negligible words such as “utter,” “marigolds,” and “crystal” are words that have narrow definitions and should not receive the kind of attention they often get.

Additionally, target words should be embedded in classroom discussion and activities that cross the reading, speaking, listening, and writing domains. These words frequently appear across content area texts (words such as “deny,” “refer,” “represent,” and “analyze”) and their various meanings are highlighted by teachers across subject matter. But again, the most common practice is for ELA teachers to have students memorize word lists and word definitions and then have students display their knowledge of these words in quizzes or tests instead of in writing or classroom discussions and debates.

Finally, best practices at the elementary school level for teaching language and important words would commit all teachers to a school-wide approach to vocabulary learning and teaching. It is the unfortunate truth that language teaching and learning has so far been solely delegated to English language arts teachers.

Best practices for targeting the right words

Common practices are more widely used

Best practices	Common practices
Teach the right words from the curriculum	Teach isolated words infrequently used in curriculum
Embed the target words in engaging texts and books	Memorize word lists
Teach words across all content areas	Teach words only in ELA classrooms

In sum, the right approach is for schools to target the right words and tie these to curricular goals. All teachers should deliver all-purpose, high-leverage language through more effective practices and this strategy should be implemented school-wide to result in more vocabulary learning.

Targeting the right words in the upper elementary and middle grades: High-leverage mortar words

The upper elementary and middle grades focus more on disciplinary literacy and mastery of content-area subject matter and related vocabulary.

Lost in the shuffle are the “mortar” words that hold these foundational pieces together. These are all-purpose academic words that are crucial for understanding texts, regardless of content area (words such as “infer,” “deny,” “justify,” “analyze,” and “interpret”). They are high-leverage words that are used to express thinking, classifying, and expressing relationships but are often overlooked instructionally, as they are thought to be learned incidentally.

These frequently occurring words that cross texts at all grade levels have been compiled by various researchers and are available electronically.³³ However, most content-area teachers do not feel responsible for teaching these all-purpose academic words crucial for understanding texts, which occur with reasonable frequency in academic texts and glossaries in the same. There are few vocabulary programs and interventions designed to target these particular words at this level, although some do exist for both the early and intermediate grades.³⁴ If educators embraced a school-wide approach to systematic vocabulary instruction, measured student knowledge, and taught the right target words, would student achievement improve? We begin to explore this question in Part III.

Part III: Does systematic vocabulary instruction during expanded learning time improve reading comprehension and vocabulary outcomes for low-income children and English language learners?

Embedding systematic vocabulary instruction into expanded learning time has the potential to improve reading comprehension and vocabulary outcomes for struggling readers. Table 5 describes core design principles of expanded learning time. Many of these principles align with the best practices of systematic vocabulary instruction.

For instance, both systematic vocabulary instruction and expanded learning time include (1) schools as the focus of reform, (2) a redesigned curriculum to add learning time, (3) expanded learning time for all students, (4) targeting of low-income schools, and (5) a focus on a school-wide effort to improve core academics, enrichment, and professional development. Details of each component of systematic vocabulary instruction were outlined in Part II (Tables 2, 3, and 4).

ELT policies should significantly expand learning time by approximately 30 percent, which translates into two hours per day or 360 hours per year.³⁵ To date, there is no study that evaluates the effects of systematic vocabulary instruction in an expanded learning time policy as defined in Table 5.³⁶ Therefore, we discuss findings from three different studies to understand how an intervention that coupled systematic vocabulary and literacy instruction with expanded learning time might affect student achievement.

Definition of expanded learning time

Core design principles include expansion of time that is significant and expanding time for all students in school

Core design principles of expanded learning time initiatives include:

- Schools as the focus of reform
- School redesign to add learning time, not a “tack on” of additional time
- Expansion of learning time that is significant
- Expanding time for all students in a school
- Focus on low-income schools
- Time and support to plan for a redesigned school calendar
- School leadership and support for expanded learning time
- Focus on core academics, enrichment, and teacher professional development

Word Generation: A school-wide, cross-content vocabulary curriculum

Word Generation is a cross-content vocabulary program designed to develop all-purpose, high-leverage vocabulary and academic language for struggling middle school students. This intervention was designed in collaboration with the Strategic Education Research Partnership, or SERP, literacy researchers from around the country, and district administrators and practitioners from the Boston Public Schools, or BPS.

This partnership with Boston, SERP's first field site, focused on improving adolescent literacy outcomes with a specific focus on vocabulary and academic language, which was cited by the district as a recurring problem. In particular, the district noted that students from low-income families and English language learners fared poorly on district and state assessments because of their limited vocabularies. Classroom practitioners also reported that because students lacked academic language and vocabulary, they did not know many of the words presupposed in content-specific texts, which limited these students' ability to comprehend or access meaning of the same.

In response, Word Generation was designed to meet goals at three levels:

- At the student level, the program would build knowledge of high-frequency academic words, skills at spoken and written academic discourse, and world knowledge.
- At the teacher level, the program would help promote regular use of effective strategies usable in everyday instruction.
- At the school level, the program would help faculty collaborate across grades and across content areas. This particular feature of school-wide implementation (or at the very least a grade level) is crucial, as it depends on the participation of teachers in different content areas to display different contexts for use and multiple exposures to the target words. This requires groups of teachers who may not frequently have the opportunity to discuss instruction to work together and to hold each other accountable for the work of supporting students' vocabulary and literacy development.

The Word Generation curriculum incorporates the best practices of systematic vocabulary instruction. It is a school-wide intervention, measures student vocabulary, and helps teachers target the right words during instruction. In addition, the Word Generation intervention organizes instruction around engaging topics and salient issues. Some of these topics appeared to be more relevant to particular students (legalization for undocumented immigrants) while others resonated with students because they reflected issues directly related to adolescence (being paid to do well in school, academic tracking, online predators, cyberbullying, etc).

Results

Word Generation was piloted in two Boston middle schools during the 2006-07 academic year,³⁷ and it then expanded to include four new schools in 2007-08. Now in its third year, 2008-09, Word Generation is being implemented in eight Boston Public Schools as well as in several other Massachusetts districts (Arlington and Cambridge) and individual schools in other states.

Results: Year 2

In its second year, an evaluation of Word Generation by researchers at the Harvard Graduate School of Education showed significantly greater growth on a curriculum-specific test among sixth- through eighth-grade students in the six schools implementing the program than in comparison schools. And although all treatment schools improved, there was variation in which words were being effectively taught. Encouraging data showed that students who came from language-minority families in the treatment schools displayed greater growth than the English-proficient students. Students' improvement on the curriculum-specific test also predicted their performance on the state English language arts assessment—again only for those in the treatment schools. The results also suggested that participation in the intervention—with its focus on deep reading, comprehending current events topics, productive classroom discussion, developing arguments, and producing persuasive essays—was a plausible contributor to student performance on the Massachusetts Comprehensive Assessment System.³⁸

This study looked at the performance of students in five schools implementing the Word Generation program and compared them to the performance of students in three schools within the same system that did not choose to implement the program. The data reported in Table 6 suggest that the comparison schools were performing better than the treatment schools at the start of the study, and that impression was confirmed by differences in performance on the curriculum-specific pretest.

It also is likely that the improvement on the multiple-choice assessment represents not only gains in specific word knowledge but also an index of exposure to the Word Generation curriculum—a curriculum that taught new content, deep reading and comprehension skills, discussion, argumentation, and writing.³⁹

Effects of the Word Generation program on vocabulary scores

Improvement for treatment group suggests not only gains in specific word knowledge but also an index of exposure to the Word Generation curriculum

Treatment status	Pre-test		Post-test		Gain
	Mean	SD	Mean	SD	
Comparison group (N=294)	21.02	6.2	22.97	7.15	1.95
Treatment group (N=632)	18.53	6.17	22.93	7.33	4.4

Source: Snow, Lawrence, and White (under review).

Word Generation and expanded learning time: The Curley School as case study

One of the eight schools adopting Word Generation this year is the Curley K-8 School in Jamaica Plain, a neighborhood in Boston. The Curley serves large numbers of low-income children (74 percent), and many of them come from second-language homes (40 percent). Half of these students are designated limited English proficient (20 percent) and are placed in sheltered content classrooms with language development support.

The Curley recently merged its elementary and middle schools and is administered by two co-principals, Jeffrey Slater (middle school) and Myrna Vega-Wilson (lower school). Jeff Slater, in his first year as principal at the Curley, adopted Word Generation upon beginning

his tenure. He had witnessed the program's impact on word learning, writing quality, and internal coherence as a principal in one of the six participating schools the year before.⁴⁰

The Curley is in its second year of No Child Left Behind “restructuring” and also is a “superintendent school,” a designation given by the district to schools that failed to make Adequate Yearly Progress, or AYP—annual targets for performance the state sets as part of the requirements of No Child Left Behind. It also is a subset of the Commonwealth Priority Schools, schools that are identified by the state education agency as underperforming. Superintendent schools are provided with extra support to improve academic achievement, including an extended school day for academic and enrichment activities (with pay for teachers), intensive leadership training, and greater accountability requirements. Along with this effort to improve academic achievement, Word Generation was adopted in the fall of 2008 by a school-wide consensus and many hours of professional development support. It is being implemented five days a week in all classrooms, including sheltered classrooms serving English language learners.

The Curley has pre-assessment data on its students' target word knowledge (the program's multiple-choice assessment) and will retest students after the curriculum is completed in June 2009. The school currently is implementing unit 10 of the 24 curricular units of Word Generation; each school has a Word Generation facilitator who oversees implementation, collects writing samples, and provides feedback to the program developers on teachers and students' levels of engagement and participates in ongoing professional development.

Word Generation also is being used as the expanded learning time curriculum for 30 or all 60 minutes of the extra hour provided by the extended day four days a week, which gives students extra support with vocabulary learning through reading, writing, and academic discussions. Wednesday is reserved for enrichment activities taught by local faculty (dance, sports, fashion design, nutrition and exercise, yoga, stepping) but also academic instruction (geometry, world literatures, poetry, art history, book clubs, economics and the stock market, bridge design, humanitarian issues and human rights, presidential elections).

text. The English language arts activities involve the launching of the original passage and culminate with an end-of-the-week writing essay.

Target words for the 10 units (50 in total) covered thus far at the Curley include anchor words (“recycling” would be an anchor word, as would “genetic” and “adoption”) along with words from the Academic Word List, which include “justify,” “debate,” “biases,” “perspective,” “strategy,” “research,” “notion,” “consent,” “ensures,” “duration,” “diminish,” and “estimate.”

The Curley is an excellent example of systematic vocabulary instruction in action: There has been school-wide adoption of the intervention, an assessment of the students’ vocabulary knowledge, and a targeting of the right words for instruction—all within the context of expanded learning time. There are no results of the ELT version of Word Generation at the Curley as of yet. However, because Word Generation has been implemented in other schools with significant growth in target words as well as in writing quality, there is a high level of probability that these gains would be replicated at the Curley—if not surpassed—with the expanded learning time being devoted to Word Generation.

Project Excel: Systematic literacy instruction and partial expanded learning time

Under the leadership of then-Superintendent Daniel Domenech, the Fairfax County Public Schools instituted an expanded learning time initiative called Project Excel in the 1999-00 school year. The goal of Project Excel was to expand learning time for the 20 lowest-performing elementary schools, which served a high concentration of mobile students, low-income students, and English language learners.⁴¹

Project Excel extended learning time for all children in a school, targeted high-poverty schools, required schools to implement an enhanced academic program, and measured improvements in student achievement. With Project Excel funds, most schools expanded time by eliminating early Monday closings, implemented technology-based phonics instruction in kindergarten and first grade, and reduced class sizes. Unlike the Word Generation intervention, Project Excel focused more broadly on increasing instructional time across content areas.

The district conducted an evaluation to assess the impact of Project Excel on student achievement.⁴² Although the final evaluation reported outcomes for literacy and mathematics, our review will focus on reading comprehension and vocabulary. In the evaluation, the 20 Excel schools were matched to 20 control schools on the basis of the School Accountability Index, or SAI, score in 2000-01. Although the percentage of English language learners was similar in Excel schools (36 percent) and control schools (34 percent), Excel schools had a larger percentage of low-income students (48 percent) than control

schools (28 percent). Given these initial differences in school demographics, it is clear that Excel schools were more economically disadvantaged than comparison schools.

From 1999 to 2003, Excel schools enjoyed significantly larger gains than non-Excel schools on the Grade 3 and 5 Virginia Standards of Learning, or SOL, tests in English. In Excel schools, the percentage of children who passed the Grade 3 English SOL tests climbed by 12 percentage points, from 50 percent in 1999 to 62 percent in 2003 in Excel schools. In control schools, SOL pass rates improved by 10 points, from 62 percent to 72 percent. Thus, the initial disparity in pass rates on the SOL Grade 3 tests between Excel and control schools closed by two points in 2003—the final year of the evaluation. On the Grade 5 SOL English tests, the gap between Excel and control schools closed by 10 points.⁴³

However, when these same analyses were conducted with Grade 4 and 6 Stanford 9 scores as the outcome, there were no statistically significant differences in the percentage of children above the 50th percentile in total reading (comprehension and vocabulary).⁴⁴ One possible explanation for the difference in test score trends for the SOL tests and Stanford 9 may stem from summer learning loss. Because the Stanford 9 tests in Grades 4 and 9 were administered in the fall, children in Excel schools may have undergone larger learning losses than children in comparison schools.

Overall, these results suggest that Excel schools closed the gap on curriculum-based tests tied to the Virginia SOL English language arts test but not on a nationally norm referenced test of reading comprehension and vocabulary.

Grade 3 (2001) to Grade 5 (2003) gains on the SOL English tests for subgroups defined by free or reduced-price lunch status and English language learner status

Results revealed no statistically significant difference in gains on the grade 3 and grade 5 SOL English tests overall and for low-income children and English language learners

Subgroups	Grade 3 (2001)	Grade 5 (2003)
Free or reduced-price lunch status		
Excel (n = 555)	46.44	46.62
Comparison (n = 289)	46.64	46.56
English language learner status		
Excel (n = 244)	45.28	47.30
Comparison (n = 182)	46.33	46.23

Source: Fairfax County Public Schools (2004), Tables I-3, I-4.

The district also examined scores for a subset of children who remained in Excel and control schools for two consecutive years. These results revealed no statistically significant difference in gains on the Grade 3 and Grade 5 SOL English tests overall and for low-income children and English language learners (see Table 7). The results from these analyses are important because there was no increasing gap in performance between children in Excel and control schools. Since Excel schools were more economically disadvantaged than control schools at the beginning of the study, children in the Excel schools might be expected to fall behind their peers in the control schools. However, it is noteworthy that low-income children and English language learners in Excel schools performed as well as their peers in the control schools, suggesting that the literacy gap did not grow larger during the elementary grades.

The evaluation of Project Excel should be viewed as a first step toward understanding the link between expanded learning time and reading achievement. The Excel intervention is a mix of expanded learning time, technology-based phonics in the early grades, class-size reduction, and school-wide

instructional programs. As a result, it is difficult to identify the contribution of each component of Excel to student learning. Most important of all, Excel and control schools were clearly different at the outset of the evaluation, suggesting that Excel schools were more disadvantaged than comparison schools. Despite these initial differences in achievement, there is some evidence that the gap in performance closed on the Virginia SOL tests and that low-income children and English language learners who remained in Excel schools performed as well as their counterparts in comparison schools at the end of the study.

Part IV: Conclusion: Putting the pieces of the puzzle together

Embedding systematic vocabulary and literacy instruction in high-poverty schools that extend learning time holds significant promise for closing literacy gaps in the elementary and middle grades. Systematic vocabulary instruction and expanded learning time represent the key elements of our three-part strategy.

- First, systematic vocabulary instruction such as the Word Generation curriculum are school-wide interventions that measure children’s vocabulary and help teachers target the right words during instruction. Recent studies of Word Generation highlight positive effects on vocabulary learning among middle school students.
- Second, partial expanded learning time policies such as Project Excel can promote school-wide improvement in student achievement while helping low-income children and English language learners keep up with their peers in more economically advantaged schools.
- Third, a promising strategy for closing literacy gaps should couple systematic vocabulary instruction with full expanded learning time policies. Embedding Word Generation in an expanded learning time policy has the greatest potential to accelerate the reading achievement of low-income children and English language learners.

By putting the pieces of the puzzle together, we have a clearer picture of how systematic vocabulary instruction and expanded learning time might be combined into an effective strategy for closing literacy gaps.

Our strategy, however, remains untested. Putting our strategy to the test will require a collaborative study that brings together a consortium of districts and schools interested in implementing our strategy and evaluating its effects on vocabulary and comprehension. In pursuing this goal, intermediary organizations that advocate for expanded learning time might play a key role in brokering relationships between researchers and educators wishing to collaborate on a future study. It is, of course, customary for researchers to encourage more study before policies are brought to scale. Ultimately, evidence from a rigorous experimental study is needed to determine whether the combination of systematic vocabulary instruction and expanded learning time could help close and eliminate literacy gaps.

References

- Abt Associates. 2006-2007. "Evaluation of the Expanded Learning Time Initiative: Year One Report." Cambridge.
- Academic Word List, <http://www.vuw.ac.nz>; (<http://www.vuw.ac.nz/lals/research/awl/index.html>).
- American Educational Research Association. "Research Points: Essential Information for Educational Policy." In "English Language Learners: Boosting Academic Achievement." Winter 2004: Volume 2, Issue 1 (http://www.aera.net/uploadedFiles/Journals_and_Publications/Research_Points/RP_Winter04.pdf).
- Adams, M.J. 1990. *Beginning to Read: Thinking and Learning about Print*. Cambridge: MIT Press.
- Anderson, R.C., and W.E. Nagy. 1991. "Word Meanings." In R. Barr and others, eds., *Handbook of Reading Research* (Vol. II, pp. 690-724). New York: Longman.
- Anderson, R. and others. 1985. *Becoming a Nation of Readers: The Report of the Commission on Reading*. Newark, DE: International Reading Association.
- Anderson, R.C., P.T. Wilson, and L.G. Fielding. 1988. "Growth in Reading and How Children Spend Their Time Outside of School." *Reading Research Quarterly*, 23, pp. 285-303.
- Applebee, A.N. 2000. "Alternative Models of Writing Development." In R. Indrisano and J. R. Squire, eds., *Perspectives on Writing: Research, Theory and Practice*. Newark, DE: International Reading Association.
- August, D., and others. 2005. "Promoting the Vocabulary Development of English Learners." In T. Young and N. Hadaway, eds., *Building Literacy: Supporting English Learners in All Classrooms*. Newark, DE: International Reading Association.
- August, D., and T. Shanahan. 2006. "Developing Literacy in Second-Language Learners: Report of the National Literacy Panel on Language-Minority Children and Youth." Mahwah, NJ: Lawrence Erlbaum Associates.
- Baker, S.K., D.C. Simmons, and E.J. Kame'enui. 1997. "Vocabulary Acquisition: Research Bases." In Simmons, D.C. and E.J. Kame'enui, eds., *What Reading Research Tells Us About Children with Diverse Learning Needs: Bases and Basics*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Balfanz, R., James McPartland and Alta Shaw. 2002. *Re-conceptualizing Extra Help for High School Students in a High Standards Era*. Center for Social Organization of Schools, Johns Hopkins University. Prepared for Office of Vocational and Adult Education, U.S. Department of Education.
- Ballen, J., and O. Moles. 1994. "Strong Families, Strong Schools: Community Partnerships for Learning." Washington: U.S. Department of Education (<http://www.projectappleseed.org/strongfamilieschools.pdf>).
- Beck, I. L., and M.G. McKeown. 2001. "Text Talk: Capturing the Benefits of Read-Aloud Experiences for Young Children." *The Reading Teacher*, 55, pp. 10-20.
- Beck, I. L., M.G. McKeown, and L. Kucan. 2002. *Bringing Words to Life: Robust Vocabulary Instruction*. New York: Guilford Press.
- Biemiller, A. 1999. *Language and Reading Success: From Reading Research to Practice*, Vol. 5. Cambridge: Brookline Books.
- . 2008. "Words Worth Teaching." Columbus, OH: SRA/McGraw-Hill.
- Biemiller, A., and N. Slonim. 2001. "Estimating Root Vocabulary Growth in Normative and Advantaged Populations: Evidence for a Common Sequence of Vocabulary Acquisition." *Journal of Educational Psychology*, 93, pp. 498-520.
- Buly, M. R., and S. Valencia. 2003. *Meeting the Needs of Failing Readers: Cautions and Considerations for State Policy*. Seattle: Center for the Study of Teaching and Policy.
- Carlo, M., and others. 2004. "Closing the Gap: Addressing the Vocabulary Needs of English Language Learners in Bilingual and Mainstream Classrooms." *Reading Research Quarterly*. April/May/June.
- Carlo, M.S., D. August, and C. Snow. 2005. "Sustained Vocabulary-Learning Strategy Instruction for English-Language Learners." In E.H. Hiebert and M.L. Kamil, eds., *Teaching and Learning Vocabulary: Bringing Research to Practice*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Chall, J.S. 1983. *Stages of Reading Development*. New York: McGraw-Hill.
- Chall, J. S., V.A. Jacobs, and L.E. Baldwin. 1990. *The Reading Crisis: Why Poor Children Fall Behind*. Cambridge: Harvard University Press.
- Chall, J. and V. Jacobs. (2003). "The Classic Study on Poor Children's Fourth-Grade Slump." *American Educator*, 27 (1), 14-15: 44.
- Chall, J.S., and C. Snow. 1982. "Families and Literacy: The Contributions of Out-of-School Experiences to Children's Acquisition of Literacy." A final report to the National Institute of Education.
- Chiappe, P., L.S. Siegel, and L. Wade-Woolley. 2002. "Linguistic Diversity and the Development of Reading Skills: A Longitudinal Study." *Scientific Studies of Reading*, (6), 2002.
- Cochran-Smith, M. 1984. *The Making of a Reader*. Norwood, NJ: Ablex.
- Coleman, James S. "Equality of Educational Opportunity (Coleman) Study (EEOS). 1966. (Computer file.) ICPSR06389-v3. Washington: U.S. Department of Health, Education, and Welfare, Office of Education/National Center for Education Statistics (producer), 1999. Ann Arbor: Inter-university Consortium for Political and Social Research (distributor), 2007-04-27. DOI: 10.3886/ICPSR06389.
- Coxhead, A. 1998. *An Academic Word List*. English Language Institute Occasional Publication No. 18. New Zealand: Victoria University of Wellington.
- Coxhead, A., and P. Nation. 2001. "The Specialised Vocabulary of English for Academic Purposes." In J. Flowerdew, ed., *Research Perspectives on English for Academic Purposes*. Cambridge, UK: Cambridge University Press.
- Cunningham, A.E., and K.E. Stanovich. 1991. "Tracking the Unique Effects of Print Exposure in Children: Associations with Vocabulary, General Knowledge, and Spelling." *Journal of Educational Psychology*, 1991, Vol. 83, No. 2, pp. 264-274.
- . (1997). "Early Reading Acquisition and Its Relation to Reading Experience and Ability 10 Years Later." *Developmental Psychology*, 33(6), 934-945.
- . (1998). "What Reading Does to the Mind." *American Educator*, 22(1), 8-15.
- Curtis, Mary E. 1987. "Vocabulary Testing and Vocabulary Instruction," in Margaret G. McKeown and Mary E. Curtis, eds., *The Nature of Vocabulary Acquisition* (Hillsdale, NJ: Lawrence Erlbaum Associates).
- Deshler, D.D., and others. 2007. *Informed Choices for Struggling Adolescent Readers: A Research-Based Guide to Instructional Programs and Practices*. New York: Carnegie Corporation.
- Dickinson, D., and P. Tabors, eds. 2001. *Beginning Literacy with Language: Home and Preschool Influences on Literacy Development*. Baltimore: Paul H. Brookes Publishing.

- Duke, N. 2000. "3.6 Minutes per Day: The Scarcity of Informational Texts in First Grade." *Reading Research Quarterly*, 35, pp. 202-224.
- Fuhrman, S. and R. Elmore. 2004. *Redesigning Accountability Systems for Education*. New York: Teachers College Press.
- Fuhrman, S. and R. Elmore. 2004. "School Reform from the Inside Out: Policy, Practice, and Performance." *Harvard Educational Review*. September.
- Fairfax County Public Schools. 2004. "Project Excel Final Report, Fall 1999-Spring 2003." Fairfax County Public Schools: Department of Educational Accountability, Office of Program Evaluation.
- Freebody, P., and R.C. Anderson. 1983. "Effects of Vocabulary Difficulty, Text Cohesion, and Schema Availability on Reading Comprehension." *Reading Research Quarterly*, 18(3), pp. 277-294.
- Gamsé, B.C., and others. *iReading First Impact Study Final Report*" (NCEE 2009-4038). Washington: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Goldfield, B.A., and C.A. Snow. 1984. "Reading Books with Children: The Mechanics of Parental Influences on Children's Reading Achievement." In J. Flood, ed., *Understanding Reading Comprehension*. Newark, DE: International Reading Association, pp. 204-215.
- Graves, M.F., G.J. Brunetti, and W.H. Slater. 1982. "The Reading Vocabularies of Primary Grade Children of Varying Geographic and Social Backgrounds." In J.A. Harris and L.A. Harris, eds., *New Inquiries in Reading Research and Instruction*. Rochester, NY: National Reading Conference.
- Graves, M.F. 2006. *The Vocabulary Book: Learning and Instruction*. New York: Teachers College Press.
- Graves, M.F., and S.M. Watts-Taffe. 2002. "The Place of Word Consciousness in a Research-Based Vocabulary Program." In A.E. Farstrup and S.J. Samuels, eds., *What Research Has to Say About Reading Instruction* (3rd ed.). Newark, DE: International Reading Association.
- Gregory, D., L. Earl, and B. O'Donoghue. 1993. "A Study of Reading Recovery in Scarborough: 1990-1992." Publication #92/93-15. Scarborough, Ontario: Scarborough Board of Education.
- Guthrie, J.T., and A. Wigfield. 2000. "Engagement and Motivation in Reading." In M.L. Kamil and others, eds., *Handbook of Reading Research*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hart, B., and T. Risley. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore: Paul H. Brookes.
- Heath, S.B. 1983. *Ways with Words: Language, Life and Work in Communities and Classrooms*. Cambridge, UK: Cambridge University Press.
- Hirsch, E.D., Jr. 1996. *The Schools We Need: And Why We Don't Have Them*. New York: Doubleday.
- Hoff-Ginsberg, E. 1991. "Mother-Child Conversation in Different Social Classes and Communicative Settings." In *Child Development*, 62, 782-787.
- Holmes, J., and R.G. Ramos. 1993. "False Friends and Reckless Guessers: Observing Cognate Recognition Strategies." In Thomas Huckin, Margot Haynes, and James Coady, eds., *Second Language Reading and Vocabulary Learning*. Norwood, NJ: Ablex.
- Johnston, B. and S. Irujo. 2001. "Research and Practice in Language Teacher Education: Voices from the Field." In *CARLA Working Papers*. Minneapolis: Center for Advanced Research on Language Acquisition. May, 2001 (<http://www.carla.umn.edu/resources/working-papers/samples/voices.html>).
- Juel, C. 1988. "Learning to Read and Write: A Longitudinal Study of 54 Children from First to Fourth Grades." *Journal of Educational Psychology*, 80(4), pp. 437-447.
- Kame'enui, E.J., and D.C. Simmons. 1990. *Designing Instructional Strategies: The Prevention of Academic Learning Problems*. Columbus, OH: Merrill.
- Kieffer, M.J., and N.K. Lesaux. (2007). "Breaking Down Words to Build Meaning: Morphology, Vocabulary, and Reading Comprehension in the Urban Classroom." *The Reading Teacher*, 61(2), pp. 134-144.
- Lazarin, M., Center for American Progress, December 16, 2008 (http://www.american-progress.org/pressroom/advisories/2008/12/expanded_learning.html)
- Lesaux, N.K., and A.C. Crosson. 2005. "Addressing Variability and Vulnerability: Promoting the Academic Achievement of English Learners in San Diego." In R. Hess, ed., *Urban Reform: Lessons from San Diego*. Cambridge: Harvard Education Press.
- Lively, Teresa, and others. "Vocabulary Improvement Program for English Language Learners and Their Classmates." Baltimore: Brookes Publishing (<http://www.brookes-publishing.com/store/books/lively-6342/index.htm>).
- Madden, N.A., and others. 1993. "Success for All: Longitudinal Effects of a Restructuring Program for Inner-City Schools." *American Educational Research Journal*, 30, pp. 123-148.
- Marzano, R. 2004. *Building Background Knowledge for Academic Achievement: Research on What Works in Schools*. Alexandria, VA: Association for Supervision and Curriculum Development.
- McKeown, M.G., and others. 1985. "Some Effects of the Nature and Frequency of Vocabulary Instruction on the Knowledge of Use of Words." *Reading Research Quarterly*, 20, pp. 522-535.
- McKeown, M.G., and M.E. Curtis, eds. 1987. *The Nature of Vocabulary Acquisition*. Mahwah, NJ: Lawrence Erlbaum Associates.
- McLaughlin, B. 1987. "Reading in a Second Language: Studies with Adult and Child Learners." In S. Goldman and H. Trueba, eds., *Becoming Literate in English as a Second Language*. Norwood, NJ: Ablex.
- Murnane, R., and F. Levy. 1996. *Teaching the New Basic Skills: Principles for Educating Children to Thrive in a Changing Economy*. New York: Martin Kessler Books.
- Nagy, W.E., and R.C. Anderson. 1984. "How Many Words are There in Printed School English?" *Reading Research Quarterly*, 19, pp. 304-330.
- Nagy, W.E., R.C. Anderson, and P.A. Herman. 1987. "Learning Word Meanings From Context During Normal Reading." *Educational Research Journal* 24 (2, Summer), pp. 237-270.
- Nair, M. 2007. "An Analysis of the Words Appearing in Middle School Textbooks." Unpublished dissertation. Harvard Graduate School of Education.
- National Center for Educational Statistics. 2005. "The Nation's Report Card." Washington: National Center for Educational Statistics.
- National Center for Educational Statistics. 2007. "The Nation's Report Card." Washington: National Center for Educational Statistics.
- National Center for Educational Statistics. 2007. "The Nation's Report Card: Reading 2007." Washington: U.S. Department of Education Institute of Education Sciences (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007496>).
- National Institute of Child Health and Human Development. 2000. "Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction." Report of the National Reading Panel. NIH Publication No. 00-4769. Washington: U.S. Government Printing Office.
- . 2000. "Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction." Reports of the subgroups. National Institute of Health Publication No. 00-4754. Washington: National Institute of Child Health and Human Development.
- Neuman, S.B., and D.K. Dickinson, eds. 2003. *Handbook of Early Literacy Research*. New York: Guilford Press.
- O'Connor, M.C., and S. Michaels. 1996. "Shifting Participant Frameworks: Orchestrating Thinking Practices in Group Discussion." In *Child Discourse & Society Learning: An Interdisciplinary Perspective*, D. Hicks, ed. Cambridge, UK: Cambridge University Press.
- Pan, B.A., and others. 2005. "Maternal Correlates of Growth in Toddler Vocabulary Production in Low-Income Families." *Child Development*, 76(4), pp. 763-82.
- Pearson, P., E.H. Hiebert, and M.L. Kamil. 2007. "Vocabulary Assessment: What We Know and What We Need to Learn." *Reading Research Quarterly*, 42(2), pp. 282-296.
- Pinnell, G.S., and others. 1994. "Comparing Instructional Models for the Literacy Education of High-Risk First-Graders." *Reading Research Quarterly*, 29, pp. 9-38.
- Proctor, C.P., and others. 2005. "Native Spanish-Speaking Children Reading in English: Toward a Model of Comprehension." *Journal of Educational Psychology*, 97(2), pp. 246-256.

- . 2006. "The Intriguing Role of Spanish Language Vocabulary Knowledge in Predicting English Reading Comprehension." *Journal of Educational Psychology*, 98(1), pp. 159-169.
- RAND Reading Study Group. 2002. *Reading for Understanding: Toward an R&D Program in Reading Comprehension*. Santa Monica: RAND.
- Rocha, E. 2008. "Expanded Learning Time in Action: Initiatives in High-Poverty and High-Minority Schools and Districts." Washington: Center for American Progress (http://www.americanprogress.org/issues/2008/07/elt_report1.html).
- Roser, N., and C. Juel. 1982. "Effects of Vocabulary Instruction on Reading Comprehension." In J.A. Niles and L.A. Harris, eds., *Yearbook of the National Reading Conference: Vol. 31*. "New Inquiries in Reading Research and Instruction," pp. 110-118. Rochester, NY: National Reading Conference.
- Rothstein, R. 2004. "Class and Schools: Using Social, Economic, and Educational Reform to Close the Black-White Achievement Gap." Washington: Economics Policy Institute.
- Salinger, T., and others. 2005. "Development of a New Framework for the NAEP Reading Assessment." In C.M. Fairbanks and others, eds., *54th Yearbook of the National Reading Conference*. Oak Creek, WI: National Reading Conference.
- Strategic Education Research Partnership (SERP). Washington. (<http://www.serp.institute.org>).
- Snow, C.E. 1993. Linguistic development as related to literacy. In L. Eldering & P. Leseman, eds., *Early intervention and culture*. Utrecht, Netherlands: Unesco Publishing, p. 133-148.
- Snow, C.E., and others. 1995. "SHELL: Spoken Language and Early Literacy Skills in Kindergarten and First Grade Children." *Journal of Research in Childhood Education*, 10, pp. 37-48.
- Snow, C., and G. Biancarosa. 2004. *Reading Next—A Vision for Action and Research in Middle and High School Literacy: A Report to Carnegie Corporation of New York*. New York: Carnegie Corporation.
- . 2008. "State Literacy Plans: Incorporating Adolescent Literacy." *Harvard Educational Review*. Spring.
- Snow, C.E., and D.K. Dickinson. 1991. "Some Skills That Aren't Basic in a New Conception of Literacy." In A. Purves and T. Jennings, eds., *Literate Systems and Individual Lives: Perspectives on Literacy and Schooling*. Albany: SUNY Press.
- Snow, C.E., J. Lawrence, and C.E. White. (Under review.) "Generating Knowledge of Academic Language among Urban Middle School Students."
- Snow, C. E., T. Martin, and I. Berman. 2008. "State Literacy Plans: Incorporating Adolescent Literacy." *Harvard Educational Review*, 78(1), pp. 211–230.
- Stahl, S., and M. Fairbanks. 1986. "The Effects of Vocabulary Instruction: A Model-Based Meta-Analysis." *Review of Educational Research*, 56, pp. 72-110.
- Stahl, S.A., and W.E. Nagy. 2006. *Teaching Word Meanings*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Stanovich, K.E. 1986. "Matthew Effects in Reading: Some Consequences of Individual Differences in the Acquisition of Literacy." *Reading Research Quarterly*, 21, pp. 360-406.
- Strategic Education Research Partnership (SERP). "Word Generation: A Middle School Academic Language Program" (<http://www.serp.institute.org>).
- Stubbs, M. 1986. *Educational Linguistics*. New York: Basil Blackwell.
- Taylor, B.M., B.J. Fry, and G.M. Maruyama. 1990. "Time Spent Reading and Reading Growth." *American Educational Research Journal*, 27, pp. 351-362.
- Waits, M.J. and others. 2006. "Why Some Schools with Latino Children Beat the Odds... and Others Don't." Phoenix and Tempe: Center for the Future of Arizona and Morrison Institute for Public Policy at Arizona State University (www.asu.edu/copp/morrison/LatinEd.pdf).
- Walberg, H.J., and S. Tsai. 1984. "Reading Achievement and Diminishing Returns to Time." *Journal of Educational Psychology*, 76, 4, pp. 442-451.
- Weizman, Z., and C. Snow. 2001. "Lexical Output as Related to Children's Vocabulary Acquisition: Effects of Sophisticated Exposure and Support for Meaning." *Developmental Psychology*, 37, pp. 265-279.
- White, C.E. 2001. "Implementation of a Vocabulary Curriculum Designed for Second Language Learners: Knowledge Bases and Strategies Used by Monolingual and Bilingual Teachers. Unpublished qualifying paper. Cambridge: Harvard Graduate School of Education.
- White, T.G., M.F. Graves, and W.H. Slater. 1990. "Growth of Reading Vocabulary in Diverse Elementary Schools: Decoding and Word Meaning." *Journal of Educational Psychology*, 82 (2), pp. 281-290.
- Wong-Fillmore, L., and C. Snow. 2000. *What Teachers Need to Know About Language*. Washington: Center for Applied Linguistics.

Endnotes

- 1 Stahl and Fairbanks, 1986.
- 2 Freebody and Anderson, 1983; Simmons and Kame'enui, 1990; White, Graves, and Slater, 1990.
- 3 Chall and Jacobs, 2003; Snow and Biancarosa, 2004.
- 4 Graves, Brunetti, and Slater, 1982; White and others, 1990.
- 5 Balfanz, 2002.
- 6 McKeown and Curtis, 1987.
- 7 Rothstein, 2004; Coleman, 1966.
- 8 Biemiller, 1999.
- 9 Elmore, 2004.
- 10 SERP, 2008.
- 11 Lazarin, Center for American Progress, December 16, 2008 (http://www.americanprogress.org/issues/2008/12/ell_report.html).
- 12 NCES, 2007 (<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007496>).
- 13 These gaps in NAEP reading imply that the average low-income child scored at the 23rd percentile and the average English language learners scored at the 16th percentile relative to the mean score for all children in Grade 8.
- 14 Hart and Risley, 1995.
- 15 Hart and Risley, 1995; Hoff-Ginsberg, 1991; Pan and others, 2005, p. 763.
- 16 Dickinson and Tabors, 2001
- 17 Ibid.
- 18 Hart and Risley, 1995; Heath, 1983; Weizman and Snow, 2001.
- 19 Hart and Risley, 2003.
- 20 NICHD, 2005, p. 439.
- 21 Chall, Jacobs, and Baldwin, 1990, p. 32.
- 22 NICHD, 2005, p. 428.
- 23 Gamse and others, 2008, p. 19.
- 24 Fillmore and Snow, 2000, p. 10.
- 25 McKeown and Curtis, 1987.
- 26 Roser and Juel, 1982; Duke, 2000.
- 27 Chall, 1983.

The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”

