



BROAD KNOWLEDGE DRIVES LITERACY

Building a diverse academic knowledge base contributes to the ongoing development of reading and writing skills

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If a hunter with a shotgun says, “There’s a grouse across that field, maybe 100 yards away,” and his friend says, “Well, shoot,” what does the friend mean?

Unless you’ve hunted grouse before or talked extensively to someone who has, the meaning of the friend’s statement is ambiguous. Unless you know that shotguns aren’t very accurate at 100 yards—and that a grouse that has flown from its cover disappears very rapidly—you might think the friend is encouraging the hunter to fire his gun. In fact, he is expressing frustration.¹

In the same YouTube video containing that anecdote, Professor Daniel Willingham of the University of Virginia asserts that “attempts to teach comprehension without prior knowledge will fail.” He cites statistics that show 62 percent of classroom time in first grade is spent on language arts and only 6 percent is spent on science and social studies combined. By third grade, those figures are 47 percent and 10 percent, respectively, which Willingham says is still far too much time on reading strategies and not enough on decoding content.²

“You can’t be teaching reading beyond the most fundamental steps without content. That’s almost by definition,” agrees Richard Long Ph.D., executive director for governmental relations at the National Association of Title I Directors.” According to Long, social studies builds background knowledge and content, which is “absolutely critical” to ensuring that students understand the meaning of what they’re reading—and learn the new content they’re supposed to learn—rather than simply building their “phonemic awareness and phonics and vocabulary.”

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IMPACT OF NCLB, COMMON CORE

The federal No Child Left Behind law that has guided American education policy for nearly a decade places heavy emphasis on mathematics and language arts, narrowing schools’ curriculum and minimizing or excluding other subjects, researchers and other observers say.

Emphasis on meeting Adequate Yearly Progress standards as defined by NCLB has been a consistent backdrop for states and districts everywhere—and AYP is defined by testing in reading and math, they say, expressing concern that this focus has pushed aside other subject matter—such as social studies, science, arts and music—which make up the bulk of students’ knowledge base about the world.

That lack of academic background knowledge stunts not only students’ understanding about subjects like history, civics, economics and geography but, before long, it works against skill development as well, many researchers believe. That’s because the development of those skills—particularly in reading and writing but also in other areas—depends upon “assumed knowledge” that’s not fully explained every time it’s referenced.

A study by Dr. Jeanne Chall and other researchers found that low-income children achieved as well as most students in second and third grade, but they began to slip in fourth grade. Word meaning went first and most noticeably, as they had a more difficult time defining abstract, academic, literary and other less common language. Oral reading and silent reading comprehension began to fall off in sixth and seventh

grade, which indicates that for a while, students were able to use context to make up for their lack of vocabulary—but eventually, left unaddressed, comprehension deserted them as well.³

“In school, we often begin a lesson assuming that most, if not all of our students have a certain level of background knowledge,” says Cheryl L. Sattler Ph.D., senior partner at education consulting firm Ethica, LLC, and former federal programs director for the state of Florida. “These basic building blocks are missing from the very beginning but they become more obvious when students—right around fourth grade—are given a text and expected to read it, understanding the inferences and thereby learning the content. All content is incomplete; writers expect readers to draw connections. When students don’t have the academic vocabulary to draw those connections—they’re lost.”

“What students already know about the content is one of the strongest indicators of how well they will learn new information relative to the content,” adds researcher Dr. Robert J. Marzano.⁴

CAN’T SEPARATE READING, CONTENT

Reading well helps students to learn in all subjects, but reading well requires the development of a knowledge base and the academic vocabulary to go along with it, including terms like citizen, consumer, industrialization, demographics and infrastructure.⁵ Nearly 55 percent of that vocabulary comes from social studies—about 32 percent from history, 10.8 percent from geography, 7.7 percent from civics and 4.3 percent from economics, according to Marzano.⁶

Background knowledge comes from two sources, Marzano says: the ability to process and store information efficiently, and the number and frequency of academically oriented experiences. Processing and storing information, known as fluid intelligence, determines whether a student who attends a museum exhibit retains new knowledge as permanent memory, Marzano explains, while the number of academic experiences adds to those memories over time to create a knowledge base.⁷

Learning academic vocabulary requires specific, repeated exposure with explicit teaching of such vocabulary through a variety of means—visual information, expository text and hands-on activities—that immerse students.⁸ But under No Child Left Behind, Sattler notes that students might spend 90 minutes on reading and another 90 minutes on math, a much smaller amount of time on science, and then once you add gym, lunch and transition time, little remains for social studies and other content-building subjects.

Advocates for more social studies have argued that academic content is important for children to know to be successful. On the National Assessment of Educational Progress (NAEP) test, 50 percent of fifth-grade readings, 60 percent of seventh-grade readings and 70 percent of ninth-grade readings could be described as “informational text.” For students to comprehend such readings, research shows that they need to understand 90 percent of words in a passage to infer the meaning of the other 10 percent.⁹

“How can we argue that social studies is critical for kids to do well in the things that count [under NCLB]?” Sattler says. “If background knowledge comes from social sciences, social studies is not a ‘nice-to-have.’ It is an absolutely core component of instruction that we ignore at our peril. Put another way, she adds, “Fluency is not simply whether a child can read a whole sentence without pausing and with proper inflection. It’s really whether the child understands what he or she is reading so that by the time he or she gets to the end of the sentence, the beginning of it hasn’t totally disappeared.”



ADVENT OF COMMON CORE

The current Common Core State Standards adopted by 47 out of the 50 states also focus heavily on mathematics and language arts, although the National Research Council has proposed developing voluntary standards in science and social studies.

The English/language arts standards refer to “anchor skills” that aren’t categorized as social studies but do address importance of specific skills across the curriculum (as reflected in the full, formal name: The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects).

Among those skills: “Analyze how and why individual events and ideas develop and interact over the course of a text,” “Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words,” and “Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.”¹⁰

“They link reading to history,” Long says. “No Child Left Behind was about measuring discrete, sub-skill advancement. The Common Core is much more about meaning, and how it’s applied in your content courses. . . . That places more of a premium on social-studies linkages.”

Experts at a National Research Council forum in November 2011 in Washington, D.C., argued that social studies should not only be taught as a stand-alone subject but interlinked with others.

“It is the integration of sciences, not the separation, that moves science forward,” said Martha Zaslow, policy and communications director for the Society For Research in Child Development, who argued for an “integrated approach” starting in elementary school that students could apply to real-life interdisciplinary uses of those lessons. “I can’t think of a social problem that has a disciplinary focus,” Grant said, at that same forum.¹¹

These examples illustrate the significance the Common Core put on standards that develop students who are College and Career Ready.

THE TITLE I POPULATION

Children in poverty need content more than most.

“The decline in social studies education is troubling for all students but especially those who are poor, migrant,

neglected, delinquent, English-language learners or otherwise at-risk,” Sattler says.

She cites the example of the nursery rhyme, “Old MacDonald Had a Farm.” “A middle-class suburban child probably pictures a farmer with a pitchfork when someone mentions Old MacDonald”, she says, “while if you’re growing up in poverty, MacDonald probably means McDonald’s, the restaurant. You don’t get a vision of a farm.” She adds, “The world you inhabit is the only world you know.”

Highly effective schools can and do make children’s worlds larger—and at the same time, build their understanding—by building background knowledge from the early grades, since “what you currently know determines what you are able to learn,” Sattler says. “Children from poverty have fewer academically-oriented experiences, fewer informational conversations with adults, and therefore come to school with less knowledge, and are less able to take in new information.”¹² Some researchers call this the Matthew effect, where the rich get richer and the poor get poorer.

Numerous studies, most notably those by researchers Hart and Risley,¹³ show “at risk” students have lower practical vocabularies than the general population; and Sattler points out that the number of school-age children speaking a language other than English at home has risen from 3.8 million to 10.9 million, or from 9 percent to 21 percent, between 1979 and 2008.¹⁴

Contrary to the beliefs of some, poorer parents shower no less attention and love on their children than do middle-class families, Marzano says, but “their access to resources [is] dramatically different,” with poorer children gaining exposure to a fraction of the academic background language. “By the time children of poverty enter school, they are at a significant disadvantage,” he says.¹⁵

For children from economically disadvantaged backgrounds, social studies and content knowledge gained in school can become a proxy for real-life experiences like traveling abroad that such students rarely experience, Long says. Schools can make a difference in infusing “crystallized intelligence”—the knowledge of facts, generalizations and principles—because research has shown that such “learned” intelligence is a stronger component of success in school than inborn innate knowledge, Marzano says.¹⁶

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“Even aspects of intelligence once thought to be genetically based appear to be amenable to change through schooling,” he says. “Schools must be willing to dedicate the necessary time and resources to enhancing the academic background knowledge of students, particularly those who do not come from affluent backgrounds.”

But obvious ways to provide such experiences, through field trips to museums and art galleries as well as school-sponsored travel, are expensive in the best of times and even more unlikely to gain traction in times of shrinking resources, Marzano says. Another approach is to promote programs that pair students with adult mentors, such as the Big Brothers Big Sisters program.

Perhaps most easily, schools can provide purposeful experiences within the regular school day to build and maintain academic background knowledge.¹⁷

THE ‘FOURTH-GRADE SLUMP’

In the early grades, students primarily focus on decoding texts and reading narrative passages, so their level of knowledge about the world around them doesn’t come into play too heavily. But as they move into more content-heavy, informational texts, a lack of knowledge begins to stymie their success as Sattler notes, citing the work of Chall and other notable reading researchers.¹⁸

Educator and University of Virginia professor emeritus E.D. Hirsch, Jr. believes that disparities in standardized test results among poor and middle-class students trace back to such differences in life experiences—such as fewer opportunities to visit museums or travel to far-off places—to a significant degree.

“Content is not adequately addressed in American schools, especially in the early grades,” Hirsch has written.¹⁹ “Inadequate attention to building students’ content knowledge is the main reason why the reading scores of 13-17 year-olds on the NAEP have not budged in years. This neglect of knowledge is a major source of inequity, at the heart of the achievement gap between America’s poor and non-poor.”

Chall and others found that children from economically disadvantaged families scored lower on the NAEP test at ages 9, 13 and 17. The achievement gap grows larger as children grow older and this happens as children move from “learning to read” in the early grades to “reading to learn” from fourth-grade onward. That transition can be troublesome when “texts begin to contain new words and ideas beyond their own language and their knowledge of the world.” The “fourth-grade slump” that results particularly impacts low-income children.²⁰

The gap in comprehension seems to jump up suddenly from fourth-grade onward, but it’s actually a more gradual process that isn’t caught sooner because testing in the early grades is heavily focused on early reading skills like decoding, Hirsch says. Once tests begin to measure the comprehension gap, they distill the fact that material not understood quickly will be forgotten before understanding arrives. “Things disappear from your mind before you have a chance to ponder the significance of what is being said,” Hirsch says.²¹



MASTERING DOMAIN KNOWLEDGE

Students need to be able to rapidly grasp the subject, the meanings of words and grammatical connections between them to overcome the limitations of human working memory. Even a simple sentence like, “Besides having had a lot of useful time in the trenches, Claire will also make a good assistant principal because she is able to keep her eyes on the ball,” assumes knowledge of the metaphors around trenches and ball games.²²

Gaining “domain knowledge” in certain subjects speeds up basic comprehension, which means that working memory is free to make connections between new material and what’s been previously learned, to draw inferences and to think about implications of what’s being said. Thus the difference between a novice and an expert in a given subject depends upon “a vast store of quickly available, previously acquired knowledge that enables the mind to take in a great deal in a brief time.” The novice will comprehend a text poorly because he will make only the few connections that his limited knowledge allows—and slowly.²³

Domain knowledge enables readers to make sense of word combinations, choose among multiple possible meanings, make inferences that depend upon prior knowledge and understand irony, metaphor and other literary devices. For example, upon reading the sentence, “Gigantic and luminous, the earliest star formed like a pearl inside shells of swirling gas,” most adults would draw upon their knowledge of the Big Bang theory, pearl formation and gases to comprehend the sentence. But amateur astronomers and physicists might have deeper understandings, while sixth-graders would have very little—because of the domain knowledge needed.²⁴

Curriculum that focuses too tightly on skill building and not enough on building background content knowledge eventually fails on both counts. American education, to meet the requirements of the No Child Left Behind law for the past decade, has narrowed the curriculum, especially in the elementary grades, according to many researchers. The newly developed Common Core State Standards moves in the direction of building content but not far enough, according to some, in incorporating social studies, which is at the heart of any broad curricula.

The impact of not building enough background knowledge hits disadvantaged children especially hard, since they have fewer opportunities to do so on their own through trips to museums and art galleries as well as travel to distant parts of the United States and around the world. Lack of academic background knowledge isn't always obvious in the early grades, when schools typically are more focused on skill testing, but from fourth-grade onward, the lack of domain knowledge limits first vocabulary and then reading comprehension.

“Speaking and writing always convey meanings that are not explicitly given by the words themselves,” Hirsch writes. “Reading comprehension depends on the reader filling in blanks and silently supplying enough of the unstated premises to make coherent sense of what is being read... Comprehension—the goal of decoding—won't improve unless we also pay serious attention to building our students' word and world knowledge.”²⁵

CITATIONS

1. "Teaching Content is Teaching Reading" video, Professor Daniel Willingham, University of Virginia department of psychology, http://www.youtube.com/watch?v=RiP-ijdxqEc&eurl=http://jaypgreene.com/&feature=player_embedded
2. "Teaching Content is Teaching Reading" video, Professor Daniel Willingham, University of Virginia department of psychology, http://www.youtube.com/watch?v=RiP-ijdxqEc&eurl=http://jaypgreene.com/&feature=player_embedded
3. "The Reading Crisis: Why Poor Children Fall Behind," Jeanne Chall, Vicki Jacobs and Luke Baldwin, 1991.
4. "Building Background Knowledge for Academic Achievement," Robert Marzano, Association for Supervision and Curriculum Development (ASCD), 2004.
5. "Accelerating Student Performance in Reading (Yes, Reading!)" presentation, Cheryl Sattler and Tina Garrison, Herff Jones | Nystrom, 2010.
6. "Building Background Knowledge for Academic Achievement," Robert Marzano, ASCD, 2004.
7. "Building Background Knowledge for Academic Achievement," Robert Marzano, ASCD, 2004.
8. "Accelerating Student Performance in Reading (Yes, Reading!)" presentation, Cheryl Sattler and Tina Garrison, Herff Jones | Nystrom, 2010.
9. Taken from Oct. 5, 2010 memorandum to Dave Read at Herff Jones | Nystrom
10. Taken from Oct. 5, 2010 memorandum to Dave Read at Herff Jones | Nystrom
11. "Experts Say Social Sciences Are 'Left Behind,'" Sarah D. Sparks, *Education Week*, Dec. 2, 2011.
12. Taken from Oct. 5, 2010 memorandum to Dave Read at Herff Jones | Nystrom
13. "Meaningful Differences in Everyday Experiences of Young American Children," Todd Risley & Betty Hart, 1995.
14. Taken from Oct. 5, 2010 memorandum to Dave Read at Herff Jones | Nystrom
15. "Building Background Knowledge for Academic Achievement," Robert Marzano, ASCD, 2004.
16. "Building Background Knowledge for Academic Achievement," Robert Marzano, ASCD, 2004.
17. "Building Background Knowledge for Academic Achievement," Robert Marzano, ASCD, 2004.
18. "The Reading Crisis: Why Poor Children Fall Behind," Jeanne Chall, Vicki Jacobs and Luke Baldwin, 1991.
19. Building Knowledge: The Case for Bringing Content into the Language Arts Block and for a Knowledge-Rich Curriculum Core for All Children, E.D. Hirsch Jr., *American Educator*, Spring 2006.
20. "The Reading Crisis: Why Poor Children Fall Behind," Jeanne Chall, Vicki Jacobs and Luke Baldwin, 1991.
21. "Reading Comprehension Requires Knowledge — of Words and the World," E.D. Hirsch Jr., *American Educator*, Spring 2003.
22. "Reading Comprehension Requires Knowledge — of Words and the World," E.D. Hirsch Jr., *American Educator*, Spring 2003.
23. "Reading Comprehension Requires Knowledge — of Words and the World," E.D. Hirsch Jr., *American Educator*, Spring 2003.
24. "Reading Comprehension Requires Knowledge — of Words and the World," E.D. Hirsch Jr., *American Educator*, Spring 2003.
25. "Reading Comprehension Requires Knowledge — of Words and the World," E.D. Hirsch Jr., *American Educator*, Spring 2003.

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