

There Are No Shortcuts: Mending the Rift between Content Knowledge and Deeper Learning

by Robert Pondiscio

Skill is knowledge. There are no shortcuts.

– E. D. Hirsch, Jr.

Is any field more plagued by false dichotomies than education?

Combatants in the math wars battle over whether children need computational skills or conceptual understanding, when, in the real world, both are needed. The lifelong love of reading and “authentic” writing so prized by whole-language enthusiasts surely is not damaged by instruction in grammar or phonics; we needn’t choose one or the other. Direct instruction or “student-centered” pedagogy? The act of teaching itself: Is it an art or a science? Yet of all the false choices we make in education, or foolishly believe that we must make, few are more vexing than the choice between content knowledge and “deeper learning.” It is not merely a false choice, but no choice at all. Indeed, it is closer to correct to describe the choices as two sides of the same coin.

Still, we persist in seeing knowledge as negotiable, fungible, and dispensable—mere grist for the mill. “Education is not the filling of a pail but the lighting of a fire,” goes a popular education homily, commonly (and mistakenly) attributed to William Butler Yeats. The implication is clear and unsubtle: As teachers, we have far more important things to do than stuff kids’ noggins full of nonsense. This inspiring but empty bromide does violence to the critical role of knowledge, the stuff in the pail, to every meaningful cognitive process prized by fire lighters, including critical thinking, problem solving, and creativity. Dichotomies don’t get more false than between knowledge and deeper learning. You can’t light a fire in an empty pail.

Not only are there no legitimate grounds for presenting knowledge and skills as opposing ideals; cognitive science makes it abundantly clear that even conceiving of content knowledge and deeper learning as in any way separate and distinct invites fundamental misconceptions that can only affect teaching and learning adversely.

In this paper, we explain the need for a rich and rigorous, content-based education as the indispensable foundation of teaching for deeper learning, and we suggest ways to end the mutually destructive conflict between two views of education that should embrace each other as mutually reinforcing.

The Case for Content

The cause of content knowledge as foundational to desirable education outcomes has long been championed by and associated with E. D. Hirsch, Jr., professor emeritus at the University of Virginia. His seminal 1983 essay, “Cultural Literacy,” in the *American Scholar* argued that “the decline in our literacy and the decline in the commonly shared knowledge that we acquire in school are causally related facts.”¹ A book-length treatment of the same subject, *Cultural Literacy: What Every American Needs to Know*, was published in 1987 and struck an unexpected chord with the general public, remaining on the *New York Times* nonfiction best-seller list for six months.

In subsequent books, articles, and lectures, Hirsch has forcefully made the case that schools must teach a common, shared body of knowledge across the curriculum to build vocabulary, raise verbal competence, and serve the cause of social and economic justice. In 1986, Hirsch established the Core Knowledge Foundation to create curriculum materials built upon his work and insights. The foundation publishes educational books and materials, provides professional development for educators, and supports a growing network of Core Knowledge schools, many of which commit to teaching the *Core Knowledge Sequence*, a detailed outline of content in language arts and literature, history and geography, mathematics, science, music, and the visual arts from preschool through the eighth grade.

Hirsch’s fundamental case for a common curriculum is rooted in his observation that cognitive skills like critical thinking, problem solving, and, especially, reading comprehension are not content-neutral, transferable skills that can be taught, practiced, and mastered in the abstract. Once students can decode text fluently, their ability to comprehend a reading passage is largely a function of making correct inferences, a process that depends heavily on background knowledge and vocabulary shared between author and reader. Unlike throwing a ball or riding a bike, Hirsch argues, reading comprehension is not a transferable skill that can be applied to any text.

A deep research base validates Hirsch’s essential argument, demonstrating that “poor” readers are often stronger than “good” readers when reading about topics that they know a lot about and where good readers lack the same knowledge. In a landmark study by Recht and Leslie,² a group of junior high school students—half of whom had been identified by standardized tests as “good” readers and the other half as “poor” readers—were asked to read a passage about a baseball game. The ostensibly poor readers with deep background knowledge of baseball easily outscored the good readers with low levels of knowledge on a test of their comprehension, effectively demonstrating the enabling role of background knowledge in reading with understanding. Even more pertinent, the struggles demonstrated by the good readers in the study underscore the difficulty that all students face when confronted with unfamiliar content.

This connection between content knowledge and cognition is the soul of Hirsch’s work and is essential to understanding his insistence on teaching a shared body of common content from the earliest days of school. In books, speeches, and articles, he frequently invokes the “Matthew Effect,”³ a term coined by University of Toronto cognitive scientist Keith Stanovich, to describe the process by which students increase—or do not increase—their vocabulary, reading comprehension, and other cognitive processes. The name comes from a passage in the Book of Matthew: “For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath.”

Knowledge and verbal proficiency are intimately intertwined. “Those who are language-poor in early childhood get relatively poorer, and fall further behind, while the verbally rich get richer,” Hirsch observes.⁴ Thus the achievement gap is best understood as a knowledge gap—if you want kids to read with understanding, you have to increase their store of knowledge across a wide variety of domains. Core Knowledge schools seek to address this through a rich, rigorous curriculum in history, geography, science, math, art, and music.

Over the years, critics have frequently attacked Hirsch’s concept of cultural literacy as “aimed at preserving the intellectual domination of white Anglo-Saxon males, and as a means of boring children with mindless drills and stuffing them with ‘mere facts.’”⁵ The topics described in the *Core Knowledge Sequence*, however, are not arbitrary, let alone a function of Dr. Hirsch’s race, privilege, or preference. It was the result of a lengthy and rigorous process of research and consensus-building among subject-matter specialists, state departments of education, and professional organizations, including the National Council of Teachers of Mathematics and the American Association for the Advancement of Science.⁶ An advisory board on multiculturalism sought to ensure that the *Sequence* represented cultural diversity before the entire project was vetted by independent groups of teachers, scholars, and scientists. The resulting draft *Sequence* was further refined at a national conference of teachers and subject specialists and published for the first time in 1990. Shortly thereafter, Three Oaks Elementary School in Fort Myers, Florida, became the nation’s first Core Knowledge school. Today, more than 1,200 schools teach all or part of the *Core Knowledge Sequence*. Parents who have never heard of E. D. Hirsch, Jr. have eagerly snapped up copies of the *What Your... Grader Needs to Know* series, based on the content detailed in the *Core Knowledge Sequence*. More than 3 million copies have been sold in the last twenty years. Today, the Common Core State Standards in English language arts, adopted by all but a small number of states, while not curriculum at all, bear Hirsch’s unmistakable thumbprint. “By reading texts in history/social studies, science, and other disciplines,” the Standards advise, “students build a foundation of knowledge in these fields that will also give them the background to be better readers in all content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades.” This is as economical an expression of Hirsch’s central argument as one is likely to encounter.

The *Sequence* is intended to outline for curriculum writers, publishers, teachers, and parents the academic content of a sound, basic education through the eighth grade. It serves to describe, but not dictate, a relatively stable foundation of common knowledge, sayings, and idioms, as well as well-known works of art, music, and literature. This is a crucial distinction. Hirsch's *Cultural Literacy* and the *Core Knowledge Sequence* that it begat are not attempts to impose a canon on schools. Rather, they are a curatorial effort aimed at ensuring that all students possess the language and background knowledge that literate speakers and writers take for granted that their listeners and readers know. Hirsch's enduring insight is that gaps in shared knowledge cause language comprehension to break down. For low-income and minority learners in particular, the soul of Hirsch's work is summed up by the title of his 2006 book, *The Knowledge Deficit*, in which he marshals compelling evidence to illustrate how the achievement gap is actually a knowledge gap. The lack of a coherent, knowledge-rich curriculum in our schools depresses student achievement because the "skill" of language proficiency rests on a foundation of shared knowledge. Affluent children's success in school is disproportionately a function of educated and verbally proficient parents, opportunities for travel and enrichment, and similar advantages. Hirsch's most profound insight is to note that disadvantaged children are what might be termed "school-dependent" learners. When they are not given access to the same broad, general knowledge as their advantaged peers, they do not—indeed, cannot—achieve at the same level.

These deeply egalitarian impulses and progressive ends have not stopped attacks on Hirsch and Core Knowledge from critics aligned with the traditions and preferences of progressive education. Alfie Kohn, an author, lecturer, and virulent critic of education reform efforts, has made ill-informed sport of Hirsch's work repeatedly over the years, deriding it directly or indirectly as "rote learning" or a "bunch o' facts" to be memorized.

I have no objection to teaching kids what the Magna Carta was, or even to having them know approximately when it was written. But if they don't have a feeling for why it was written, how it was received, why it matters when it was written, if they don't have an opinion about its contents, if it's taught in such a way that they have no reason to care about any of this, then what's the point? To prepare them for an appearance on Jeopardy?'

The lampooning of Hirsch's work as trivial pursuit, rote learning, or lists of disconnected facts to be memorized is a common misconception almost certainly stemming from *Cultural Literacy* itself. The book gained national attention largely as a result of its list of 5,000 things that "every American needs to know," which sparked a lively debate over what was included and what was left out. But the debate, which made Hirsch famous and his book a best-seller, tended to obscure his unassailable, central point: Understanding even fairly simple texts requires a reader to command a common set of sophisticated words, allusions, and the ability to make inferences

correctly, all of which rest on background knowledge shared by the reader and the writer—and least apt to be acquired, without the school’s purposeful efforts, by children from disadvantaged backgrounds. This fundamental disconnect led University of Virginia professor of psychology Daniel Willingham to describe *Cultural Literacy* as “the most misunderstood education book of the last fifty years.”⁸

Willingham draws an important distinction, largely unappreciated by Hirsch’s critics, between “rote” knowledge and “inflexible” knowledge. For example, a student who renders the definition of the equator as “a menagerie lion” rather than “an imaginary line,” is demonstrating how a bit of information can be reduced and memorized at the level of sounds, without any meaning or sense. Rote learning, Willingham notes, is not (as Hirsch’s critics might complain) decontextualized facts or knowledge. A more helpful definition might be “memorizing form in the absence of meaning.”

“Rote knowledge” has become a bogeyman of education, and with good reason. We rightly want students to understand; we seek to train creative problem solvers, not parrots. Insofar as we can prevent students from absorbing knowledge in a rote form, we should do so....But a more benign cousin to rote knowledge is what I would call “inflexible” knowledge. On the surface it may appear rote, but it’s not. And, it’s absolutely vital to students’ education: Inflexible knowledge seems to be the unavoidable foundation of expertise, including that part of expertise that enables individuals to solve novel problems by applying existing knowledge to new situations—sometimes known popularly as “problem-solving” skills.

Clearly, rote learning is not a goal prized by Hirsch or other advocates of a knowledge-rich curriculum. But neither is the mere accumulation of a “bunch o’ facts.” Knowledge is a means to many ends, including those prized by advocates of deeper learning.

What Is Deeper Learning?

“Those with a rich base of factual knowledge find it easier to learn more—the rich get richer,” Willingham wrote in a 2006 essay, “How Knowledge Helps,” in *The American Educator*. “In addition, factual knowledge enhances cognitive processes like problem solving and reasoning. The richer the knowledge base, the more smoothly and effectively these cognitive processes—the very ones that teachers target—operate.”¹⁰

There is no serious disagreement that the outcome of a sound, basic education should be students who can solve problems, think critically, collaborate, communicate effectively, and function as informed and effective citizens. Neither is there anything new or novel about these desired outcomes. However, in recent years, this time-honored suite of competencies has been rebranded

“21st Century Skills” and, more recently, “deeper learning.” What exactly is “deeper learning”? For the purposes of this discussion, we will adopt the definition offered by the National Research Council’s Committee on Defining Deeper Learning and 21st Century Skills:

We define “deeper learning” as the process through which an individual becomes capable of taking what was learned in one situation and applying it to new situations (i.e., transfer)...The product of deeper learning is transferable knowledge, including content knowledge in a domain and knowledge of how, why, and when to apply this knowledge to answer questions and solve problems....While other types of learning may allow an individual to recall facts, concepts, or procedures, deeper learning allows the individual to transfer what was learned to solve new problems.¹¹

Note that this definition in no way conflicts with Willingham’s observation that knowledge is the “unavoidable foundation of expertise” that “enables individuals to solve novel problems by applying existing knowledge to new situations.” Conflict between the two is possible only if one fails to appreciate the role of knowledge as the wellspring of skills. Deep knowledge and deep learning are conjoined twins; they cannot be separated.

Advocates of deeper learning have tended to argue that while mastery of academic content is important, the goal is to prepare students to apply their knowledge in “real life.” Critical thinking, collaboration, and communication are seen as essential outcomes, as is the ability of students to direct their own learning and demonstrate habits of mind such as resilience or grit. “Students are expected to be active participants in their education,” notes the website of the Hewlett Foundation, a champion of educating for deeper learning. “Ideally, they are immersed in a challenging curriculum that requires them to seek out and acquire new knowledge, apply what they have learned, and build upon that to create new knowledge.”¹²

In this way, deeper learning advocates, perhaps more than content knowledge advocates, raise the bar for teachers and condemn “the typical worksheet, drill-and-memorize, and test preparation approach to classroom teaching.” The gold standard for classroom teachers is instructional methods that “require students to use important information repeatedly in complex and meaningful ways such as writing papers or completing projects.”¹³

Like content knowledge, deeper learning is not without its detractors. “In the past century, several alternatives have arisen to dethrone the prominent role of knowledge in schools: project-based learning, inquiry and discovery learning, higher-level thinking, critical thinking, outcome based education, and 21st-Century Skills. Now it is deeper learning,” observes Brookings’ Tom Loveless, who cautions educators and policymakers to approach deeper learning with skepticism:

These ideas represent a variety of approaches to curriculum and pedagogy. They are not all the same, but they share one characteristic. All are advertised as transcending, and therefore superior to, academic content organized within traditional intellectual disciplines. It is not enough for students to know the major events of U.S. history, for example, but to be able to critically analyze the histories, any history, that one studies. Knowing about science is inferior to doing science. It is less important to learn the algorithms and articulated procedures of mathematics than to apply them in real world contexts while solving real world problems.¹⁴

As Loveless implies, the principal threat to deeper learning is how easily it can be reduced to a fad or scuttled by ill-conceived or sloppy implementation. Worse, it can become the plaything of self-interested parties in educational technology, publishing, or teacher professional development. Less thoughtful cheerleaders for deeper learning and twenty-first-century skills have done their cause a disservice among more sober analysts with oft-repeated claims, for example, that “the store of human knowledge doubles every five years” and will double every seventy-two days by 2020, or that 90 percent of the jobs our children will do for a living haven’t been invented yet.¹⁵ The thrust of such overheated and unverifiable claims is that a content focus is a fool’s errand in our schools; twenty-first-century skills should be our paramount concern. This strictly utilitarian view of schooling completely neglects Hirsch’s view of knowledge as essential for language proficiency and displays a self-defeating disregard for the essential work of patient and coherent knowledge-building as a means to the ends prized by deeper learning enthusiasts.

Love and Marriage

While no one seriously disagrees that “higher-order thinking skills” are the best possible outcome of a good education, poorly implemented skills-focused, “content lite” schooling can serve no good end. It will compromise literacy achievement and most seriously damage the prospects of low-income students and children of color, who can least afford the weak tea of a watered-down curriculum. But the greatest stumbling block to deep learning is the nature of the thing itself. Can critical thinking actually be taught? “Decades of cognitive research point to a disappointing answer: Not really,” observes Willingham:

The processes of thinking are intertwined with the content of thought (that is, domain knowledge). Thus, if you remind a student to “look at an issue from multiple perspectives” often enough, he will learn that he ought to do so, but if he doesn’t know much about an issue, he can’t think about it from multiple perspectives. You can teach students maxims about how they ought to think, but without background knowledge and practice, they

probably will not be able to implement the advice they memorize. Just as it makes no sense to try to teach factual content without giving students opportunities to practice using it, it also makes no sense to try to teach critical thinking devoid of factual content.¹⁶

In short, content knowledge and deep learning are like love and marriage; you can't have one without the other. To be fair, well-informed observers seldom argue for teaching content without application or practice—or teaching critical thinking devoid of factual content. It is more common for content knowledge and deeper learning advocates simply to talk past each other.

For example, if a teacher wants to teach a skill like comparing and contrasting, she might ask her students to fill out a Venn diagram. One group of students might compare and contrast deserts and tundra; others will look at igneous and sedimentary rock; still others might examine the two houses of Congress. A content advocate will look at this activity and conclude that the teacher is indifferent to building knowledge. A skills advocate will look at the same activity, see children engaged with geography, geology, and civics, and see respectful attention being paid to academic content.

In a skills-oriented classroom, content is content is content. It's a mere delivery mechanism for the skill. It could just as easily be apples versus oranges or baseball versus football, since the outcome that matters is the skill. If the domain knowledge drives the instruction, however, the compare-and-contrast exercise might be an organic part of a unit on colonization, perhaps asking students to compare English and Spanish settlements in the New World; or embedded within a civics unit on the separation of powers in the federal government; or the differing views of government described by John Locke and Thomas Hobbes. The skill serves as a way of thinking about and organizing the content, which is seen as intrinsically important, not mere grist for the mill.¹⁷

This is not a trivial difference. Those who favor rigorous, knowledge-rich curriculum must make the case for a clearly defined, *sequenced* core curriculum for many reasons: it boosts reading comprehension by building background knowledge. Hirsch has argued that it eliminates gaps and repetitions and helps address issues associated with student mobility and offers context that will make deeper learning not merely possible but relevant and meaningful to students. Without an agreed-upon sequence, a student might end up studying the rain forest three times in elementary school and the Bill of Rights never, for example. Building broad background knowledge should be viewed as a necessary, but not sufficient, condition to encourage critical thinking and problem solving. The absence of a coherent, sequenced curriculum risks superficiality, gaps, repetition and confusion, which, in turn, make deeper learning less likely to gain traction.

Grant Wiggins, an education researcher and author of the influential book *Understanding by Design*, acknowledges that content is essential to skill but argues that “the mistake that people

make is they take that argument and they run with it way too far. ‘First you have to learn a whole bunch of stuff. No, that doesn’t follow,’ he notes. “In fact, you learn a bunch of stuff by trying to use what you know. That dynamic is to me the essence of learning. It’s not the information; it’s the transfer of the information.”¹⁸

In fairness, neither Hirsch nor the Core Knowledge Foundation has ever insisted that a body of knowledge must be taught before it can be applied. Wiggins’s curriculum work is even featured in the foundation’s professional development workshops for teachers. But the misconception is instructive and illuminates the distrust and suspicion that can flare up between advocates for content knowledge and those for deeper learning.

The fallacy that must at all costs be avoided is to conceive of thinking skills as independent of content, since this would lead teachers to conclude that students can learn, practice, and master these skills by interacting with any content whatsoever.

Bridging the Divide

In the spirit of détente, let us simply concede that advocates for content knowledge and deeper learning have misunderstood and needlessly antagonized each other: Advocates for a content-rich education are dismissive of deep learning; those who prize skills such as critical thinking, problem solving, and cognitive skills are indifferent to content and fail to place content at the heart of those skills. How were these clearly compatible learning outcomes set in opposition to each other in the first place?

Teachers cannot be blamed if the word “mere” has become a frozen epithet affixed to the word “knowledge.” Bloom’s celebrated Taxonomy places knowledge, defined as “the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting,” at the lowest level of sophistication, implying that merely knowing stuff matters less than the ability to analyze, evaluate, or synthesize information. “It is difficult to identify a more powerful influence on the American school curriculum, and perhaps curricula worldwide, than Bloom’s Taxonomy,” observes Loveless.¹⁹ A nuance-averse interpretation of Bloom’s leads to encouraging teachers to “up the rigor” of their questions and assessments, while giving short shrift to the role of knowledge in supporting rigorous thinking. One teacher recalls being told after an observation that it was important “not to ‘spoon-feed them knowledge’ and instead, ‘get them evaluating higher up Bloom’s taxonomy.’ It seemed almost universally acknowledged that learning facts was passive, dull and unhelpful.”²⁰ It is less commonly observed but equally true that in the absence of rich factual knowledge, higher-order thinking will be superficial or simply wrong.

Standards and assessments also tend to reinforce the idea that knowledge is negotiable and dispensable while thinking skills are paramount and essential. Standardized reading tests are designed to be content-agnostic—a fiction regularly and carefully debunked by Hirsch, who has described such assessments as “de facto tests of background knowledge.”²¹ Feedback to teachers on student performance on standardized tests invariably focuses on the skills—making an inference or finding the main idea, for example—that a student got wrong, rather than the content of the reading passages on the exam. But a student who cannot make correct inferences about a passage in an unfamiliar domain may do so with ease if the passage is about a familiar subject.

It is a common complaint (and a fair one) that high-stakes testing has come to dominate schooling. It is less commonly observed that much of the effort that goes into helping students prepare and practice for tests is misguided and even counterproductive. Reducing reading comprehension, for example, to skills such as “making inferences” and “finding the main idea” reinforces the mistaken idea that such skills are content-neutral.

“Inference-making is not purely formal process,” Hirsch observes. “When the skill fails it’s usually because information is lacking. Inference-making can be described as supplying missing premises from one’s own prior knowledge in order to complete a kind of syllogism. The purely transferable elements of thinking skills turn out to be minor elements that are easily acquired. What really counts is relevant knowledge about the problem at hand.”²²

The bottom line is that being an effective or a creative thinker in one domain does not make you skilled in another. “The how-to elements of creativity, problem solving, language comprehension, and critical thinking are far, far less important than domain-specific knowledge,”²³ Hirsch notes.

Similarly, English language arts standards typically describe the reading “skills” that students must be able to demonstrate, not academic content, furthering the mistaken impression that content and skills are disconnected. Common Core State Standards (CCSS) English language arts “anchor standards” in reading, for example, require that students be able to “read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.” Which texts? Which knowledge domains? CCSS does not say. However, the guidance to adopting states as districts is clear and unambiguous: [W]hile the Standards make references to some particular forms of content, including mythology, foundational U.S. documents, and Shakespeare, they do not—indeed, cannot—enumerate all or even most of the content that students should learn. The Standards must therefore be complemented by a well-developed, content-rich curriculum consistent with the expectations laid out in this document [emphasis added].²⁴

The important business of creating or adopting a “well-developed, content-rich curriculum” is left to districts, schools, and individual teachers—an enormous and potentially ill-considered leap of faith. Standards are not curriculum. As long as reading tests attempt to assess students without controlling for background knowledge, such tests will always favor those whose out-of-school experiences gives them an advantage, or whose education provided a firm foundation across subjects. And teachers will likely persist in the vain effort of attempting to detach cognitive skills like reading comprehension, critical thinking, and problem solving from enabling knowledge domains.

In sum, where well-intentioned experts, including cognitive scientists, see a clear and obvious link between content knowledge and higher-order thinking skills, the practical realities of the classroom, including standards and assessments, tend to conspire against a comprehensive view, tacitly encouraging teachers to treat knowledge and deeper learning as separate and distinct. Neither side is well served.

Teaching for Transfer

If the false dichotomy between knowledge and skills is baked in to teacher training, reinforced by standards and assessments, it will remain a challenge to move the field beyond its well-established patterns of thinking. The first and most important step toward making deeper learning a credible outcome of schools is for all parties in education, from practitioners to policymakers, to come to terms with just how difficult it is to “teach for transfer” and stop looking for shortcuts. It is certainly true that we cannot train the mind to master deeper learning in the abstract as a transferable set of mental muscles. The best we can do is to create the curricular and pedagogical conditions that most favor the transfer of knowledge. Experts suggest several practical steps teachers can implement, including extensive use of examples to teach abstract concepts, making a concerted effort to build background knowledge, and perhaps most important, keeping in mind the useful distinction between rote and inflexible knowledge. Educators, policymakers, parents, and, especially, advocates for deeper learning would do well to consider Willingham’s simple advice:

Remember that...knowledge is a natural step on the way to the deeper knowledge that we want our students to have....Frustration that students’ knowledge is inflexible is a bit like frustration that a child can add but can’t do long division. It’s not that this child knows nothing; rather, he doesn’t know everything we want him to know yet. But the knowledge he does have is the natural step on the road to deeper knowledge. What turns the inflexible knowledge of a beginning student into the flexible knowledge of an expert seems to be a lot more knowledge, more examples, and more practice.²⁵

A healthy skepticism about broad claims for deeper learning is in order. Educators must be vigilant in resisting quick fixes that minimize the critical role of domain knowledge and expertise in deeper learning. Suggestions that we want students to “think like scientists” or “read like historians” are unhelpful. If we fail to appreciate how large stores of scientific or historical knowledge are an essential building block of expertise, we will continue to serve students poorly.

For their part, content advocates must take seriously the observations of critics who worry that a knowledge-rich curriculum, delivered less than skillfully, can be a dull and dispiriting slog for students. For older students, particularly, more opportunities to apply knowledge in self-directed, deep learning experiences would make school relevant at an age when students are increasingly disaffected and wondering, “Why do I need to learn this?” Likewise, advocates for project-based learning and other forms of inquiry learning might acknowledge that their preferred modes of instruction, however engaging, will bear sweeter fruit in middle and high school if the pedagogical practices that they prize rest on a sturdy foundation of knowledge and if students arrive in their classrooms with less diversity of preparation.

Finally, advocates for a content-rich curriculum might advance their cause by emphasizing the need not just for content but for a coherent approach to knowledge-building as a means to enhance the “stickiness” of deep learning and to clear up persistent misconceptions.

Conclusion

Effective people have gained 21st-century skills because they have knowledge in a wide range of domains. This turns out to be the only answer consistent with a massive body of evidence.

—E. D. Hirsch, Jr.

Given the rapid advance and acceptance of the Common Core State Standards, the broad demand for skilled critical thinkers from business, politicians, and even parents, and the well-intended impulses of mainstream educators, we can anticipate that the demand for deep learning as an educational outcome is unlikely to be deterred. Getting there, however, will require accepting the firmly established role of content knowledge as foundational to cognitive skill. What is missing is a consensus on the foundational knowledge most conducive to deeper learning and the role of schools in ensuring that they get it.

This line of thought quickly leads to a foreseeably difficult and thankless task. It is easy and not politically difficult to describe the cognitive skills that we want students to demonstrate. No one

will seriously object to reading comprehension, critical thinking, or problem solving as desirable ends of education. Articulating the specific knowledge domains, works of art, or literature needed to achieve those broad goals invites controversy, to put it mildly. Progress, as Hirsch himself argued, “is going to take us inexorably, from a comfortable vagueness to a thankless and uncomfortable specificity regarding the content we teach our students.”²⁶

There is broad, general agreement on knowledge as the operating system for deeper learning. There is also broad general agreement that deeper learning, not mastery of a body of content, is the true goal of a well-trained mind. The unresolved conflict is whether we are willing to insist on “uncomfortable specificity” of curricular content. While the desirability of “teaching for transfer” is clear and obvious, we have not, in the main, created the curricular conditions necessary to accomplish that goal. “Teaching for transfer within each discipline aims to increase transfer within that discipline....Research to date provides little guidance about how to help learners aggregate transferable competencies across disciplines. This may be a shortcoming in the research or a reflection of the domain-specific nature of transfer.”²⁷

It’s almost certainly the latter.

Standards—even de facto national standards—in the English language arts are not sufficient. It is simply too much to expect that common standards will be met without common content and assessments that reward them. In their absence, the wish for deep learning remains largely aspirational.

One solution to the problem of deeper learning may be simply to adopt a standard core curriculum in elementary school through fifth grade and accountability measures that reward teaching it. Hirsch has long championed this idea, and his *Core Knowledge Sequence* describes in detail the curricular content from preschool to eighth grade. However, he has also argued that alternative sequences are possible, and even desirable. The foundational nature of knowledge as well as high student mobility rates argues strongly for a prescribed body of curricular content at least until the fifth grade and perhaps through the eighth grade for students in schools and districts that serve high concentrations of low-income students. Any state or school district that is serious about meeting standards needs to establish a curriculum of “thankless and uncomfortable specificity” if the deeper-learning goals of the standards are to be attained.

Endnotes

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