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CHAPTER 17

Research Foundations of the Common Core State Standards in English Language Arts

P. David Pearson

The Common Core State Standards (CCSS; National Governors Association Center for Best Practices & Council of Chief State School Officers [NGA Center & CCSSO], 2010a) for English Language Arts (ELA) have achieved remarkable "purchase" in the educational community in the two years of their existence (at the time when this chapter was composed in the late summer of 2012). Some 46 states have adopted them, and even the states that haven't are being pressured to make sure that their unique state standards "entail" everything covered in the Common Core. The U.S. federal government has made an enormous investment (about $350,000,000 as of fall 2012) in the development of assessments to measure whether students—and, by implication teachers and schools—can meet the performance measures laid out in the grade-by-grade outline of the Standards. The primary authors of the ELA Standards, Coleman and Pimentel, have crafted a document dubbed the *Revised Publishers' Criteria* (2012) to guide the educational publishing industry in shaping the materials it develops to help educators meet the Standards. And there seems to be an increasingly large, seemingly endless stream of commercial materials lined up to capture the "market" in helping states, districts, schools, teachers, and students meet the Standards. So as our colleagues and policymakers plunge headlong into that stream, I wanted to step back, take a deep breath, and ask, why are we all so engaged in and committed to this effort? What is it about the Standards that renders them so compelling? In particular, I wanted to ask about the evidentiary basis of the assumptions about teaching and learning that undergird the Standards in the hope that we might evaluate whether it is that underbelly of evidence that we find so appealing.

But before addressing these research foundations, I feel compelled to make it clear to all readers that I am not a neutral observer in the

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CCSS effort. I was a member of the Validation Committee that, in the year before the release of the CCSS in June 2010, was charged with the task of reviewing several drafts, providing feedback to the writers of the Standards and the sponsoring agencies (the NGA Center for Best Practices and the CCSSO), offering suggestions for revisions both major and minor, and ultimately blessing the release of the published version of the Standards with our vote of confidence. So, in a sense, I have placed my signature of approval on them as they currently exist. Even more important, I have—while continuing to criticize them for shortcomings that I hope will be fixed in a "revised edition"—championed their cause as vastly superior in concept and execution to any of the myriad of state standards that preceded them. I am not an innocent bystander in this effort; to the contrary, I have high hopes and high expectations for these Standards. Readers of this chapter deserve to know that.

Two features of these Standards in particular compel me to support them: (1) their vision of what it means to be an accomplished reader and (2) their outlook of how the Standards should (or should not) shape instruction at the school and classroom level. Their view of the accomplished reader, unpacked at the very outset of the Standards document, is a description of an active, engaged reader endowed with agency:

> Students who meet the Standards readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. (NGA Center & CCSSO, 2010a, p. 3)

And their view of the role that Standards should play in the classroom suits my moral and ethical values about teachers and teaching. The body politic has the right to set the ends or goals for our schools and students, but teachers must have the prerogative to determine the means of achieving those ends:

> By emphasizing required achievements, the Standards leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed. (NGA Center & CCSSO, 2010a, p. 4)

These Standards then, at least in their idealized form, leave a little room for players at every level in the educational system to place their

"signature" on the Standards. This is a model that treats teachers as the professionals that they are and ought to be.

My plan is straightforward: I will list what I take to be the key assumptions underlying the Standards and ask, for each, whether the research base is strong enough to merit our support and our commitment to implement them. This is not a meta-analysis or even a classic review of the literature. It is my personal and professional reading of the research.

Analyzing the Assumptions

My reading of the CCSS yields five key assumptions:

1. We know how reading develops across levels of expertise.
2. Literacy is best developed and enacted in the service of acquiring disciplinary expertise.
3. Standards establish ends or goals; teachers and schools control the means.
4. Students read better and learn more when they experience adequate challenge in the texts they encounter.
5. Comprehension involves building models of what a text says, what it means, and how it can be used.

As I examine each assumption, I will employ both theoretical and empirical lenses to gauge its validity. I realize that such evidence is a high bar to set for education standards, which more often than not invoke professional consensus (agreement among experts) or best practices (practices enacted by exemplary teachers or standards currently employed by high-performing countries or states) as the most important criteria in evaluating the validity and relevance of a new set of standards. Even so, empirical and theoretical evidence provide a useful touchstone, especially for the basic principles (i.e., assumptions) that underlie a set of standards. Why? Because such evidence represents the highest aspirations we can hold for the standards to which we hold our students, teachers, and schools accountable.

Assumption #1: We Know How Reading Develops Across Levels of Expertise

The CCSS for ELA Reading Standards consist of 10 College and Career Readiness Anchor Standards that represent common practices that students should be capable of enacting when they leave high school for

higher education or the workplace. In addition, the CCSS document provides grade-level enactments of each of these Anchor Standards for both literary and informational texts and, and from grades 6 through 12, there are also Standards for Literacy in History/Social Studies, Science, and Technical Subjects. It is across the grade-level Standards that we encounter the assumptions about what develops across time within disciplines. Implicit, if not explicit, in such a framework are learning progressions that underlie the standards—what students can or should do at every stage along the way.

It is no accident that learning progressions have been a key part of modern test development; with their emphasis on defining what students know and can do at each successive grade or level of expertise, they map readily onto item specifications that form the development of test items for various subtests that might comprise a longitudinal (cross-grade, for example) assessment system. Learning progressions are judged to be "validated" when the tests that are developed from them confirm that student performance conforms to the hypothesized progressions; that is, students can do A before B before C before D, but not D before B or C. It seems a natural and logical step to move from validated learning progressions to curricular "scope-and-sequence" charts. And in an idealized world of standards, assessments, and curricula, precisely these relationships would prevail.

Do the CCSS represent such an idealized world? Do the progressions for each of the 10 Anchor Standards for Reading represent "validated" stages of student development that logically and empirically precede and follow one another? Do we know, for example, that the second-grade version of Reading Standard 3 for Literature logically or empirically precedes the third-grade version and logically follows the first-grade version? In Table 17.1, I have listed the versions of CCSS Reading Standard 3 (Key Ideas and Details) from the Literature (L) and Informational (I) Text strands for K–5 (NGA Center & CCSSO, 2010a, pp. 11–14).

What is the basis of these progressions? First, for literary texts, from LK (Literature Standard 3 at kindergarten level) to L1 (Literature Standard 3 at grade 1), the difference is (a) scaffolding and (b) the number of things to be described (notice that in L1, one has to describe the entities using key details, but in LK, the entities only have to be identified). From L1 to L2, the focus shifts to characters, as the discussion of events and settings is dropped, as is the term "key details" (NGA Center & CCSSO, 2010a, p. 11). From L2 to L3, the emphasis on characters is retained, the infrastructure of the construct of character is expanded to include inner phenomena, and the requirement is added that those inner phenomena

Table 17.1. Progression of CCSS Reading Standard 3 for Literature and Informational Texts Across Grades K–5

Grade	Literature	Informational
K	With prompting and support, identify characters, settings, and major events in a story. (p. 11)	With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text. (p. 13)
1	Describe characters, settings, and major events in a story, using key details. (p. 11)	Describe the connection between two individuals, events, ideas, or pieces of information in a text. (p. 13)
2	Describe how characters in a story respond to major events and challenges. (p. 11)	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (p. 13)
3	Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events. (p. 12)	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (p. 14)
4	Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions). (p. 12)	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (p. 14)
5	Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact). (p. 12)	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. (p. 14)

Note. From National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects* (pp. 11–14). Washington, DC: Authors. Available at www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf

provide explanatory fabric for the plot structure of the narrative. At L4, we see an expansion to other elements of the story besides character (e.g., setting or event) that might be described and a parallel expansion to more character detail types (thoughts, words, or actions) that might be used to do the explaining. Then in grade 5, students are asked to do what they were asked to do in L4, but for two or more story elements (NGA Center & CCSSO, 2010a, p. 12).

A similar progression appears in the Reading Standards for Informational Text. The IK (Informational Text Standard 3 at kindergarten level) is just like the LK except for the difference in the entities that get connected (NGA Center & CCSSO, 2010a, p. 13). From IK to I1, students lose the prompting but the connection criterion remains. The move from I1 to I2 brings in disciplinary perspectives: events (in the general sense) move to *historical* events, ideas move to *scientific* ideas, and "pieces of information" is replaced by *technical procedures*. The move from I2 to I3 entails the use of discipline-specific discourse for the ideas; the "language that pertains to time, sequence, and cause/effect" are required (NGA Center & CCSSO, 2010a, p. 14). In I4, two elements are added: description is replaced by explanation, and the reader is required to base responses on the information in the text. Finally, in I5, the requirement for explanation moves from the individual entities to relationships and interactions between and among the entities—although what counts as an entity is a bit different in I4 (events, procedures, ideas, or concepts) than in I5 (individuals, events, ideas, or concepts).

So where did these sequences of Standards come from? What are their intellectual foundations? They certainly do not resemble any learning progression that I have ever seen from a test-development effort. They vaguely resemble what we might see in a scope-and-sequence chart from a basal reader. They appear to rely on common sense notions of how task complexity increases across grade levels. I found five distinct types of grade-to-grade shifts for the Reading Standards for K–5:

- Change in the level of **support**—the removal of scaffolding when moving from K to grade 1 for both L and I texts.
- Change in the **number** of entities involved in the process—in moving from L3 to L4, the number of entities increases—from characters in L3 to characters, settings, or events in L4.
- Change in the **type** of entities—in moving from I1 to I2, there is a change from general to discipline-specific entities. In moving from I4 to I5, the change is from explaining entities to explaining relationships and interactions.
- Increase in the **cognitive** demand(s) of the **process**—there is a change from description to explanation in moving from L2 toL3 and from I3 to I4; also moving from explanation to comparison in L4-L5.
- Addition of **evidentiary** requirements—represented in the move from I3 toI4.

Is there an evidence base for these progressions? Personally, I know of few, if any, studies that actually document the progression of performances for particular standards, such as summarizing, explaining details, inferring the meanings of unknown words, or comparing texts on a set of dimensions. The research base to document any given progression from K through grade 12 simply does not exist.

How, then, did the designers come up with these progressions? As I examine these progressions and the grade-to-grade changes, they have the look and feel of a professional consensus process in which knowledgeable experts in the field got together and used all of the intellectual resources available to them—research (in cases where there was relevant evidence—e.g., that even kindergartners can retell stories), best practices (in this case, exemplary standards documents from high-performing states and countries), and experience (and the judgment that comes with it)—to settle on a course of action for defining the progressions, particularly in areas in which the available research evidence was spotty.

I was able to document just such an account of the process by contacting the designers of the ELA Standards—David Coleman and Susan Pimentel—and the Math Standards (NGA Center & CCSSO, 2010c)—Phil Daro—who corroborated the process I have described (Daro, personal communication, 2012; Pimentel, personal communication, 2012). It was a consensus process, and those involved in the consensus did employ these three resources in coming to agreement about the specific version of each Anchor Standard at each grade level. So the degree to which these progressions are research based is a function of the degree to which those who designed and reviewed the Standards brought their knowledge of and commitment to the relevant research bases to their work.

Reliance on professional consensus to determine the specific nature of standards does not distinguish the CCSS from a host of other standards efforts. For decades, various professions have used the process of requiring an authoritative body to reach consensus on (a) the particular standards that the profession will impose on its members, (b) what counts as evidence that they have been achieved, and/or (c) what level of performance on some assessment is required to meet a particular standard. Sometimes that authoritative body comprises scholars in the field (e.g., legal scholars for the bar exam or educational scholars for standards like these), sometimes it comprises end users of the standards (e.g., teachers and administrators), and sometimes it includes ordinary taxpayers or policymakers (folks whose lives will be affected by the professionals who are accountable to the standards).

But professional consensus is not an independent, empirically validated research base. So, in a literal sense, the progressions in the CCSS for ELA do not have a rich and elaborate research base to support them—at least to support every transition in an Anchor Standard from one grade to the next.

However, in invoking a professional consensus process, the Standards tacitly admit to the "fallibility" of professional judgment and, by inference, to the need to review the Standards periodically to make sure that new knowledge, research, and best practices—as well as insights gained in trying to implement the Standards—are used to revise the Standards on a continuing basis. As a participant in the consensus process, I look forward to the regular revision of them in light of these developments. The idea of a set of standards as a living document that is constantly scrutinized for its validity, as opposed to one that is carved in stone for eternity, is a welcome image for the future.

Assumption #2: Literacy Is Best Developed and Enacted in the Service of Acquiring Disciplinary Expertise

The CCSS for ELA are all about the acquisition of knowledge, particularly disciplinary knowledge of the sort that one acquires in rigorous coursework in the sciences, social sciences, and humanities. In fact, in the introductory description of the accomplished reader, the authors emphasize knowledge acquisition as a major goal of the CCSS: "Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance" (NGA Center & CCSSO, 2010a, p. 7). Content acquisition requires, rationalizes, and enhances the use of literacy and language tools, such as reading, writing, and talking. As such, this doubly integrated view (among the language arts and between the language arts and the disciplines) presents a sharp contrast with the encapsulated view of reading as an independent subject, to be taught and measured on its own terms, as in the era of No Child Left Behind (NCLB). (Please note that the ideas in this section first appeared, in modified form, in a book chapter by Pearson & Hiebert [2013]).

Integration of language processes around literature has always been a staple in the K–12 language arts curriculum, but when disciplinary content (via history, science, or the arts) is added to the mix, the nature of instruction takes quite a different form. A disciplinary view of literacy recognizes that literacy is an essential part of any disciplinary practice and that different skills, knowledge, and reasoning processes are privileged as one moves from one discipline to the next (Heller & Greenleaf, 2007;

Shanahan & Shanahan, 2008). One of the most obvious ways in which literacy demands differ across disciplines is in the nature of the text (van den Broek, 2010). Texts that students encounter in history are quite different from those they encounter in chemistry or literature. Another transparent difference is in vocabulary (each discipline has its own jargon), but syntax is also different, as evident in a mathematical equation and a historical document. But differences exist on the processing side as well. Shanahan and Shanahan (2008) found that experts in different disciplinary areas approached the reading of texts in unique ways, and these unique approaches to reading reflect differences in the values, norms, and methods of scholarship within disciplines.

There is a growing body of research documenting the efficacy of a discipline-based approach to ELA curricular practices, with science leading the way (see Pearson, Moje, & Greenleaf, 2010). In general, integrated approaches have outperformed "encapsulated" approaches on a variety of measures (Cervetti, Barber, Dorph, Pearson, & Goldschmidt, 2012; Pearson et al., 2010; Greenleaf et al., 2011). While the research in social studies is not as extensive, what little exists favors integrated approaches (De La Paz & Felton, 2010; Halvorsen et al., 2012; Williams et al., 2007).

All things considered, this assumption seems moderately well documented in the research. Ironically, however, it is not well embedded in K–12 instruction. Reading instruction is still the province of literary study, both in the primary grades—where informational texts are truly marginalized (Duke, 2000), and in secondary schools—where reading is assigned to the English curriculum and poorly represented and seldom taught in other disciplines (Pearson et al., 2010). The CCSS for ELA provide hope that a disciplinary lens will be focused on literacy instruction in the years to come.

A corollary of Assumption 2 is that the responsibility for developing literacy should be shared by ELA and disciplinary teachers. And the implicit (if not explicit) message throughout the CCSS for ELA is that disciplinary teachers will have to share responsibility with English teachers in implementing, teaching, and measuring mastery of these Standards. The CCSS for ELA, then, are staking out a moral position about who bears responsibility for reading. But a moral imperative is not a reality, and it remains to be seen whether the mantle of disciplinary literacy, as intriguing and well documented as it is, will be taken up by educators over the next several years. The research base to support this assumption exists. Even a core set of instructional practices exists (e.g., Schoenbach, Greenleaf, & Murphy, 2012). But we still don't know whether

professional expertise and professional practice will exist in the degree required to transform this moral imperative into a classroom reality. That will be one of the stiffest challenges these Standards face.

Assumption #3: Standards Establish Ends or Goals; Teachers and Schools Control the Means

The Standards tell a good tale of teacher and school empowerment. The quote from page 4 of the Standards (NGA Center & CCSSO, 2010a) that appears early in this chapter is as clear a commitment to teacher prerogative as one is likely to find in this era of accountability. And that commitment to prerogative and professional judgment is raised again on page 6 in discussing what is *not* covered by the Standards, specifically the need for schools and teachers to accommodate individual differences among students. Another index of the commitment of the CCSS to teacher learning is symbolized in the triadic model of text complexity. Two sides of the triangle are quantitative indexes of complexity (e.g., lexiles or readability) and qualitative (close examination of the linguistic demands of the text). These two are clearly the purview of technical analysts, but the third—reader and task considerations—is set squarely on the shoulders of teachers, as indicated in this statement in CCSS Appendix A:

> While the prior two elements of the model focus on the inherent complexity of text, variables specific to particular readers (such as motivation, knowledge, and experiences) and to particular tasks (such as purpose and the complexity of the task assigned and the questions posed) must also be considered when determining whether a text is appropriate for a given student. Such assessments are best made by teachers employing their professional judgment, experience, and knowledge of their students and the subject. (NGA Center & CCSSO, 2010b, p. 4)

The "deal" in this view of Standards is that the larger body politic (the nation, the profession, the state, the district, or the school) gets to set the goals (the signposts to guide the way), but teachers, either individually or collectively, get to determine the means by which they meet the goals. This is the view of standards championed in their initial instantiation in the late 1980s, when standards-based accountability was first proposed as a model of school reform at the historic Governors Conference in Charlottesville, VA, in 1989. And it certainly held sway for the decade of the 1990s, only to be replaced by a model, via the NCLB Act of 2001, that fixed both the ends of instruction (through state standards and accountability practices) and the means of instruction (through

requirements that teachers follow officially sanctioned curricula) to a high degree of fidelity (Pearson, 2007).

The great irony of reform in this era is that research-based pedagogical practices for students (i.e., based on the Report of the National Reading Panel [National Institute of Child Health and Human Development, 2000]) were delivered to teachers using an approach (top-down external delivery of mandates) that essentially ignored the past 30 years of research on teacher learning. The research base on teacher learning (e.g., Lieberman & Wood, 2003; Richardson & Placier, 2002; Wilson & Berne, 1999) documents the efficacy of approaches to school change that (a) situate teacher learning within communities formed to support teacher learning and change efforts, (b) provide teachers with authority in determining the curricular practices they will implement, and (c) allow teachers to set the professional development agenda and deliver a substantial amount of the professional development activities within their own community. Top-down goals for curricular reform, it seems, can only achieve lasting realization when they are delivered through bottom-up approaches to change. The mechanism is the transparent commitment to change that individuals and groups develop when they have a stake in the effort, when they have placed their own "signatures" on the goals and the efforts to achieve them (Lieberman & Wood, 2003).

The question for the CCSS is whether they will deliver on their promise to cede to teachers the authority (or at least some of the authority) to determine how they will help their students meet the CCSS within their school settings. The Standards say, "yes, they will." But a recent document coming out of the CCSS movement says, "maybe not."

The publication of a recent document on the CCSS website, *Revised Publishers' Criteria for the Common Core State Standards in English Language Arts and Literacy, Grades 3–12* (Coleman & Pimentel, 2012), leads me to wonder whether the letter and spirit of the Standards document has been sacrificed in the service of influencing published programs and materials. The Standards, as I have argued twice, are noteworthy for the degrees of freedom that they cede to the local level, even classroom teachers. Again, the Standards "leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed" (NGA Center & CCSSO, 2010a, p. 4). But consider in Table 17.2 the sequence of verbatim passages from the *Revised Publishers' Criteria* illustrating how they undermine the promise of teacher choice in the Standards themselves. These directives to publishers directly contradict the commitment to teacher prerogative promised in the Standards. If publishers are persuaded to follow these

Table 17.2. Excerpted Directives From the *Revised Publishers Criteria* for the CCSS

Regarding the nature of tasks to guide discussion	A significant percentage of tasks and questions are text dependent…. Rigorous text-dependent questions require students to demonstrate that they not only can follow the details of what is explicitly stated but also are able to make valid claims that square with all the evidence in the text. Text-dependent questions do not require information or evidence from outside the text or texts; they establish what follows and what does not follow from the text itself. (p. 6)
Regarding the sequences of questions and tasks	The Common Core State Standards call for students to demonstrate a careful understanding of what they read before engaging their opinions, appraisals, or interpretations. Aligned materials should therefore require students to demonstrate that they have followed the details and logic of an author's argument before they are asked to evaluate the thesis or compare the thesis to others. (p. 10)
Regarding the need to stay close to the text	Materials make the text the focus of instruction by avoiding features that distract from the text. Teachers' guides or students' editions of curriculum materials should highlight the reading selections…. Given the focus of the Common Core State Standards, publishers should be extremely sparing in offering activities that are not text based. (p. 10)

Note. From *Revised Publishers' Criteria for the Common Core State Standards in English Language Arts and Literacy, Grades 3–12*, by D. Coleman & S. Pimentel, 2012. Washington, DC: National Governors Association Center for Best Practices and Council of Chief State School Officers. Available at www.corestandards.org/assets/Publishers_Criteria_for_3-12.pdf.

criteria, they will turn out scripts, not broad options. Unless teachers reject materials from the marketplace, teacher and school choice about how to "deliver the curriculum" will be markedly reduced, perhaps to the point that there is no real choice among the commercial alternatives. So teachers are promised choice and prerogative in the Standards only to learn that all of the materials available to them to deliver the curriculum are cut from the same cloth. I worry that if the *Revised Publishers' Criteria* prove effective, teachers will become cynical about the choices offered by the Standards.

Assumption #4: Students Read Better and Learn More When They Experience Adequate Challenge in the Texts They Encounter

The rationale for the increase in text complexity called for in the CCSS (e.g., see Anchor Standard for Reading 10, NGA Center & CCSSO, 2010a, p. 10) is straightforward: the gap between reading competence at the end

of high school and the beginning of college is so great that we must begin a gradual increase in the level of complexity students encounter in grades 2 and 3 so that we can close what amounts to about a gap of about a grade level and a half at the end of high school. The commitment is stated clearly in Appendix A of the CCSS: "Students need opportunities to stretch their reading abilities" (NGA Center & CCSSO, 2010b, p. 9).

Perhaps no feature of the CCSS is a greater challenge to the conventional wisdom in teaching reading than the text complexity commitment. Over the past 70 years, beginning with Betts (1946), we have converged on a theory of reader-text match that strives to find the optimal level of challenge for each reader, resulting in constructs such as independent (what I as a reader can manage on my own) and instructional (what I can manage with the help of a teacher or coach) levels. The goal has always been to maximize the amount of time that students spend reading in that "Goldilocks" zone—where books are neither too easy nor too hard, but "just right"—so that they help students achieve growth by requiring to continually reach just beyond their grasp. But with the CCSS, we are told that such an approach, if implemented throughout the elementary and secondary years of schooling, will not provide enough challenge to ensure that students will leave our secondary schools ready for the literacy challenge of college or workplace careers.

In a recent essay, Hiebert and Mesmer (in press) have noted that the text complexity initiative of the CCSS rests on three key assumptions (the first two are assumptions of fact, and the last is a recommendation to remedy the situation):

1. Many current high school graduates are not prepared to read the texts of college and the workplace.
2. K–12 texts have decreased in complexity.
3. Increasing the complexity of texts from the primary grades onward can close the gap between the levels of texts in high school and college. (Hiebert & Mesmer, pp. 3–4)

The evidence in support of the first assumption is compelling. Williamson (2006, 2008) has undertaken extensive analysis of the level of complexity and difficulty in the texts required in high schools and college. Measuring complexity in Lexile levels, he found that the gap between 12th grade (1220L) and the first year of college (1350L) is about 130L. The typical grade-to-grade increase in the secondary years is about 50L; thus, if we want students to enter college or the workplace ready for the texts they meet, we will have to close about an 80L gap, or about 1.6 grade levels, on a readability scale.

Evidence for the second assumption is not quite as extensive but certainly suggestive of a decline over time. Chall, Conrad, and Harris (1977) examined the 6th- and 11th-grade textbooks of the era to determine whether they were challenging our students as they had in the past. Using the Dale-Chall (1948) formula, which was validated on the textbooks in place during the 1940s and 1950s, Chall and colleagues found that the high school texts of the 1960s and 1970s did not measure up to those in earlier decades: 11th- and 12th-grade texts scaled in the 9th- and 10th-grade readability bands, thus providing a piece of the explanation for the puzzling decline in SAT scores in that era. Hayes and his colleagues (Hayes, Wolfer, & Wolfe, 1996) examined an extensive corpus of K–8 school texts in three eras (1919 [illegible]5, 1946, 1962, 1963 1991) to determine whether there had been a decline in text difficulty across the eras. They did document a decline in text challenge for the later periods, but the decline was more consistent in the higher grades. Curiously, there was no decline for grade 3 texts. They could not conduct as systematic an analysis of high school texts across eras, but they did find that the average difficulty of grade 12 literature selections in the last era was lower than the average for 7th- and 8th-grade texts in the pre-World War I era. Thus, there is reason to believe, as the CCSS Appendix A asserts, that text complexity is on the decline—and, more importantly, is not up to the level required for success with post-secondary performance.

The third assumption, that we can get students back on track for college and career readiness by gradually increasing the linguistic complexity of texts required of students in grades 2–12, is, of course, the unknown; it awaits empirical evaluation. Certainly those who favor this approach can point to the predictive power of school-text complexity in explaining exit indicators, such as SAT scores (Chall et al., 1977; Hayes et al., 1996), as evidence in support of the recommendation to up the ante on text complexity throughout the grades. And there is at least a preliminary piece of evidence that an intervention based on this principle works: With Learning Oasis, developed by Hanlon and colleagues, students experience a sequence of ever more complex texts as they progress through a planned sequence of complexity (MetaMetrics, 2010). In essence, what Hanlon and colleagues have tried to do is embed the scaffolding that we usually cede to teachers within the digitally delivered text environment.

The big question for me (Pearson & Hiebert, 2013) is, What makes us think that we can improve things by expecting students to read *above*-grade-level texts when, in the current environment, we cannot manage to help our students handle texts that are *at* grade level? Unless something changes, I cannot imagine that the exhortation to teachers and students

to try harder will succeed where serious efforts to bring students up to grade-level expectations have failed. A recent examination of the impact of text complexity and text length on comprehension (Mesmer & Hiebert, in press)—in particular the gap between student ability (as measured in Lexile units) and text complexity (again calibrated in Lexile units)—suggests that stretching the gap between ability and text challenge may be harder than we might imagine, at least in situations in which no teacher scaffolding is provided. For me, teacher scaffolding (what the CCSS authors refer to as reader-task elements) focused on making accessible texts that would otherwise fall into students' frustration level zone is both the key to making this recommendation work as well as the big unknown in the equation. The body of scholarship on rendering difficult texts accessible is small. We know that it can be done. In a sense that is what the comprehension strategies and text discussion are intended to do: help students approach and gain knowledge from challenging texts. But I have seen little research focused on the differential effects of a range of text-accessibility scaffolds on the understanding of texts that range in both linguistic and conceptual complexity.

So what is the final word on the research foundations of this assumption? It is a mixed message. There is certainly good reason to conclude, based on trustworthy scholarship, that the level of challenge in texts used in schools today is not what it *needs* to be—that our current diet of school texts is not paving the way to college and career readiness. And there is reason to believe that text challenge is not what it *used* to be either. Finally, I agree that it is critical to support teachers and students in their attempts to meet a more challenging portfolio of texts. There is some support for engineering scaffolding into instructional learning materials and environments. And there is a lot of research to document teacher efficacy: Teachers can do much, via ambitious instruction and rich text discussions, to support access to difficult texts. What we do not know, and need to conduct research to learn, is whether these sorts of scaffolds will eventually enable students to manage complexity on their own. And self-sufficient learners and workers is the only acceptable outcome for college and career readiness.

Assumption #5: Comprehension Involves Building Models of What a Text Says, What It Means, and How It Can Be Used

Key Components of a C-I Model. My initial reading of the Standards, particularly the introduction and the 10 Anchor Standards for Reading, led me to conclude that the writers of the Standards had paid attention to

the cognitive research of the past 40 years. By all accounts, the Standards take seriously the view of reading comprehension emanating from the cognitive revolution, particularly the construction-integration (C-I) models elaborated in the past 15 years by scholars such as Kintsch (1998), van den Broek, Young, Tzeng, and Linderholm (1999), and Perfetti (1999).

In a C-I model (e.g., Kintsch, 1998), two levels of representation are critical—the text base and the situation model. For Kintsch, the *text base* involves an accurate reading of the text for the purpose of getting its key ideas into working memory. But even in building this accurate rendition of the text, knowledge plays a key role. We use our knowledge of the world, along with our knowledge of how language and text work, to make all the local inferences required to connect the sentences to one another—to build, if you will, a coherent representation of "what the text says." Consider the following sentences:

1. Henry desperately wanted to buy a baseball glove.
2. He took a job delivering newspapers in his local neighborhood.

Connecting pronouns to their antecedents is one kind of linking inference (for example, figuring out that the *he* in sentence 2 refers to *Henry* in sentence 1). Another kind of local inference is making logical connections among ideas or events in the text. In the example sentences, this means that a local inference is involved in figuring out that wanting a new baseball glove was a key motive in prompting Henry to take the job delivering newspapers.

The kind of reading involved in constructing a text base is what is called for in CCSS Anchor Standard for Reading 1: "read closely to determine what the text says explicitly" (NGA Center & CCSSO, 2010a, p. 10). It is also central to Reading Anchor Standards 2 (central ideas) and 3 (idea development), and to certain degrees, Standards 5 (text structure) and 8 (evaluate arguments).

A second level of representation is the *situation model*. The situation model is the coherent mental representation of the events, actions, and conditions in the text. Readers integrate information from the text base (the initial representation the words, sentences, and paragraphs) with available and relevant prior knowledge retrieved from long-term memory and integrate it all into an emerging situation model that represents meaning of the text at that point in the process. If the text base is an account of what the text *says*, then the situation model can be thought of as an account of what the text *means*. A compelling situation model requires readers to meet two standards: (a) the model has to be consistent with the current text base (up to that point in the reading), and (b) it must

be consistent with the store of relevant prior knowledge activated up to that point.

When readers build a situation model, they rely even more heavily on background knowledge and inferential processes than in building a text base. In the scenario with Henry and the baseball glove, for example, readers might infer, even on the basis of minimal information from the text base, that Henry is a self-motivated, independent person who understands that he has to work for what he wants in life. They might also have to connect the idea of a newspaper deliverer with their schema for newspaper delivery in different neighborhoods, and they might infer that the neighborhood in which Henry lives is more suburban than urban or rural. At a simpler level, a first grader who reads that George Washington chopped down a cherry tree will infer that he used a hatchet or an axe to perform the act. And writers of narratives often omit the motives that drive characters to particular actions in a story on precisely the grounds that readers can and will use their knowledge of stories, life experiences, and human nature to infer those motives. In the scenario for Henry, we would have to infer, based on our own experiences, why Henry was so desperate for a new glove: perhaps his old glove was worn out, or maybe he had made an all-star team, or it could be that his old glove was embarrassingly out of date.

Constructing a situation model is central to reading comprehension. It is the mechanism that allows readers to integrate what they already know with what they read—and, equally as important, it is on the pathway to building new knowledge structures; these new knowledge structures will modify or replace those currently in long-term memory.

Just as knowledge drives comprehension, so does comprehension drive knowledge production and refinement. This is the kind of reading that is emphasized in CCSS (NGA Center & CCSSO, 2010a, p. 10) Anchor Standards for Reading 7 (synthesize and apply information presented in diverse ways) and 9 (compare texts) , and it is implicated in Standards 4 (interpret words and phrases) and 6 (assess point of view). One can build a strong argument that situation model construction is entailed in, if not licensed by, Standards 1–3; verbs such as *analyze, summarize, develop,* and *interact* are the essence of integrating ideas across texts, sentences, ideas, and experiences.

The Standards Research Base Mapping. When I read the Standards before they were released, I recognized that the authors of the Standards did not portray everything in precisely the same way that I would have. For example, the CCSS allocate more attention to "constructing" a text

base—and a bit less attention to building an "integrated" situation model—than I would have. I thought they gave minimal attention to the sociocultural context in which reading occurs and comprehension is enacted; readers—as I knew and the research documented—read and understand differently as a function of the purpose (where, when, and why one is reading) and academic traditions (personal response, an authorial reading, or a critical reading) that the context brings to the reader. But the family resemblance between the model implicit in the Standards and my reading of the research base was clear. Indeed, there was so much to like about the focus on understanding and knowledge building (that's what happens when the information in the situation model seeps back into a reader's long-term memory and expands the reader's knowledge base), that it seemed appropriate to cut the Standards a little slack on a few minor points of disagreement.

And for at least a year after their initial publication, I felt as though I could say, in good conscience, that the CCSS for Reading were based on a fair recognition of the cognitive research base in reading—with at least a tip of the hat to an ever-expanding sociocultural research base. And I felt that if teachers at all grade levels would worry about the twin goals of building a solid *text base* and equally solid *situation model*, we would be helping students figure out what texts "say" and what they "mean" in their quest for an expanded knowledge base. That for me was the point of this whole effort—and what merited our strong support as a profession.

Revised Publishers' Criteria. But all that changed for me with the publication of the *Revised Publishers' Criteria* (Coleman & Pimentel, 2012), which I already cited as compromising the CCSS promise of teacher prerogative and the research documenting the key role of teacher aegis in curriculum reform. I think the *Revised Publishers' Criteria* document represents an equally strong betrayal of the view of comprehension that undergirds the Standards themselves.

As I suggested and documented earlier, the Standards themselves tell a comprehension story characterized by balance between the text and the reader in determining legitimate interpretations or readings of text. Several Anchor Standards for Reading (1, 2, 3, 5, and 8) privilege close readings of the content "on the page," while others promote integration (2, 7, and 9), and still others privilege analysis and interpretation of the text (4, 6, and 8).

Not so with the *Revised Publishers' Criteria*. There is a bit of waffling. For example, in the first quote, the phrase "make valid claims that square with all the evidence in the text" (Coleman & Pimentel, 2012, p. 6) implies that the claim could come from outside the text. An example might be a

word or phrase to describe a character's values or character (he's a real villain!) that, while not *in* the text, is licensed by the text. But the quote goes on to say, "Text-dependent questions do not require information or evidence from outside the text" (Coleman & Pimentel, 2012, p. 6), a position that would seem to block inferences to prior knowledge. The second quote in Table 17.2 seems to argue that text-based reading should be logically precedent to either evaluation or comparison, two processes that presumably invoke prior knowledge. And the third quote in Table 17.2 is a kind of consumer warning about the seductive character of knowledge-based activities.

My suspicion is that Coleman and Pimentel (2012) were persuaded that many of the "building background prior to reading" segments of basal lessons or the personally witnessed versions of prereading picture walks and discussions of relevant knowledge and experiences were pushing the text out of reading lessons. I have witnessed my share of 40 minutes of experience swapping followed by 3 minutes of eyes on print as well. I agree that these sorts of extravagances and distortions of the "new to known" principle of learning deserve our whole-hearted critique. But the remedy is not, I think, to eradicate or minimize the role of knowledge in comprehension and discussion but rather to balance it vis-à-vis the text. It is the constant orchestration of *constructing* a text base and *integrating* it, along with knowledge, into a situation model, that we want to promote. And we must always keep in mind the advantage that readers accrue once information is encoded in the situation model: It stands ready to be incorporated into our existing store of knowledge in long-term memory, where it can serve in a knowledge role in the next cycle of comprehension and knowledge building.

Misconstruing the Comprehension Process. But the main reason to object to the "keep prior knowledge at bay" principle that pervades the *Revised Publishers' Criteria* is that it reveals a fundamental misunderstanding of the comprehension process. It is not as though prior knowledge was an "optional" cognitive move that one could turn on or turn off at will. A reader cannot build a text base or a situation model without invoking relevant prior knowledge; there is nothing voluntary about it.

Recall the scenario about Henry and the baseball glove. The knowledge base had to be accessed to make all the links between anaphora (pronouns and the like) and the referents (names and verbs) to which they point. And knowledge (about what drives people to different actions) was the primary resource for making the logical inferences between Henry's actions and motives, such as wanting the glove and getting a job.

But the links from text to knowledge go even deeper in building a text base. Individual words encountered in the text base in the current construction cycle determine which schemata will be called up from prior knowledge, and until those schemata are activated, there is no text base construction—and no comprehension.

One of the most telling quotes from the *Revised Publishers' Criteria* (Coleman & Pimentel, 2012), which focuses on the primacy of text and close reading, implicates this issue of what counts as the text in building a text base:

> The Common Core State Standards place a high priority on the close, sustained reading of complex text, beginning with Reading Standard 1. Such reading focuses on what lies within the four corners of the text. (p. 4)

The four corners metaphor is very appealing (after all, it implies close reading that is both comprehensive and deep), but it introduces a puzzlement. Does it refer to the four corners of the page? Or could it be a folio (2-page spread)? A section or a chapter? And when one stays within the four corners of the page, does that evoke a different close-reading process than the close-reading process that is evoked when one stays within the four corners of, say, a chapter—where some of the "text" is not easily available for ready inspection and reference? Is linking the ideas in two adjacent sentences the same as linking the ideas in two sentences that are four sentences apart? How about four pages apart?

We don't have basic research available to answer these questions, but they raise a fundamental dilemma: as a reader moves across successive cycles of construction, integration, and restructuring one's knowledge base, at what point does information that was in the first sentence or two of processing vacate the text and become a part of the knowledge base that one uses in later C-I cycles? Is there a real difference between an idea that entered my knowledge base from reading I did three weeks ago, three pages back, three minutes ago, and three seconds ago? The slope between the text base and the knowledge base is indeed slippery.

Finally, knowledge is implicated in the ongoing "monitoring" process in which a reader asks, "Does this all make sense?" because the only standard available for sense-making is a reader's cumulative knowledge store about what normally happens in the sorts of situations described in the text. Now just as surely, the other standard for sense-making is the text base one has constructed up to that point in the reading. In fact, what drives comprehension is the perception that one's account of the current situation model meets the joint constraints of one's relevant prior knowledge (Is this consistent with what I know to be true of the world?)

and the current text base (Does this square with the message I am getting from the text?). Text and knowledge are the standards by which the validity of comprehension is judged.

Asking students to resist appealing to prior knowledge as they try to understand text is like asking leaves not to fall or dogs not to bark. Leaves fall and dogs bark; it's in their nature. And it's in the nature of comprehension to use knowledge to carry out the various aspects of the process: constructing meaning, integrating new with known information, and monitoring for meaning. Ceding the point that as a profession we have overindulged at the trough of prior knowledge (too much building background at the expense of active reading of text), the remedy is to balance its role, not eliminate it. One hope is that the next revision of the *Publishers' Criteria* will be better aligned with the knowledge base for reading comprehension. The Standards are likely to need less revision on this assumption.

Conclusions

So what is the bottom line on the CCSS for ELA in terms of their research foundations? Are the Standards based upon substantial and up-to-date findings from research about teaching, learning, and reading? If so, is that research transparently represented in the public presentation of the Standards? Finally, based on an analysis of current developments in the Standards movement, is there reason to believe that the implementation of the CCSS will remain true to their intentions and to the research on which they are based?

As a way of summarizing the points elaborated in the preceding pages, I have organized the major points in Table 17.3. I have rated the research base on three of the assumptions in the "strong" category—disciplinary grounding, teacher prerogative, and comprehension model. Among those three, I viewed their clarity in the Standards as high or moderately high. Text complexity was rated moderate on the research base but very strong on the clarity of representation: whatever it is we know about text complexity is *in* the Standards. When it comes to my assessment of the likelihood of implementation, it varies, but for different reasons. I think that disciplinary literacy and text complexity are likely to be implemented as described in the Standards. Why? Because the research is transparent and the press for each assumption is distributed across a wide range of current movements, such as deeper learning, project-based learning, and a variety of efforts to increase the challenge of curriculum (e.g., National Research Council, 2012). I have rated the other

Table 17.3. Evaluation of the Assumptions Underlying CCSS-ELA

Assumption	Strength of Research Base	Clarity of Representation in the Standards	Likelihood of high fidelity implementation
Learning Progressions	Very Weak	Low	Low
Disciplinary Grounding	Strong	High	High
Teacher Prerogative	Moderately Strong	High	Low
Benefits of Text Complexity	Moderate	Very High	High
Comprehension Model	Strong	Moderately High	Low

three assumptions—learning progressions, teacher prerogative, and the comprehension model—as unlikely to be implemented with fidelity to the research base.

Learning progressions *will* be implemented; that is for certain—but not with fidelity to any research base but with fidelity to the consensus-based progressions that are in the Standards. In short, students, teachers, and schools will be held accountable to a set of plausible, perhaps even reasonable, but thoroughly untested progressions; the question that only time can answer is whether these progressions will promote growth on the cognitive processes that they are supposed to index.

Teacher prerogative and the comprehension model, two assumptions that are strongly represented in the Standards and clearly based on research, will not, in my view, be implemented with a high degree of fidelity, because the guidelines in the *Revised Publisher's Criteria* are likely to undermine the Standards as they are written. Only if schools can resist these guidelines and stay true to the version of the Standards in the original document do we have a hope of a high-fidelity implementation of what we know about reading comprehension and about teacher learning within school-change efforts.

These deep concerns and misgivings notwithstanding, I have supported and will continue to support the CCSS movement. Why? For three reasons. First, compared with their alternative—the confusing and conflicting world of 50 versions of state standards—the CCSS are clearly the best game in town. Second, with any luck, these will prove to be "living Standards" that will be revised regularly so that they are *always* based on our most current knowledge. Third—and most important—my reading of the theoretical and empirical scholarship on reading comprehension and

learning lead me to conclude that these Standards are definitely a move in the right direction—toward (a) deeper learning, (b) greater accountability to careful reading and the use of evidence to support claims and reasoning in both reading and writing, and (c) applying the fruits of our learning to improve the world beyond schooling and text.

TRY THIS!

- Use a discussion web to help students consider relevant and irrelevant information in math story problems. For example, in the center of the page draw a circle and write this question: "Which information is needed to solve the problem?" Then, draw an arrow from the left of the circle and label that column "Irrelevant." Draw an arrow from the right side of the circle and label that column "Relevant." Finally, draw an arrow from the bottom of the circle and label the box "Solution." In this way, students can differentiate between sources of information needed to solve the problem.
- Use the guided reading procedure to emphasize a close reading of any text of your choice. This procedure requires that students gather information and organize it around pertinent ideas, and helps students develop a strong factual base, as follows:

    1. Prepare students for reading by clarifying key concepts, building background knowledge, and providing direction for reading.
    2. Assign a reading selection and provide a general purpose for reading, such as "Read to remember all you can."
    3. As students finish reading, have them turn books face down, and ask them to tell what they remember by writing things they remember on the whiteboard.
    4. Help students realize if they have missed some important information or remembered some incorrectly.
    5. Redirect student to their books and review the text selection to correct inconsistencies and add more important information.
    6. Organize the new information into some kind of outline.
    7. Question students to stimulate their analysis of the material and synthesis with previous material.
    8. Provide immediate feedback, such as a short quiz, as a reinforcement of short-term memory.

DISCUSSION QUESTIONS

1. According to Pearson, literacy practice occurs best within content area disciplines where students are given the opportunity to engage in literacy strategies that enhance their understanding of the content. However, in many schools, literacy instruction is most often tied directly to literature and falls within the purview of ELA teachers only. How can students' levels of expertise in reading increase if content area teachers embrace the idea that literacy practices occur when students interact with authentic texts in content-specific disciplines?
2. One of the selling points of the CCSS is the autonomy the Standards award teachers (that is, the CCSS afford teachers the leeway to form their own instructional plans and assessments in order to achieve the Standards). However, as Pearson notes, the release of the *Revised Publisher's Criteria* may impede any autonomy ceded by the CCSS. Locate the *Revised Publisher's Criteria* and skim the document to evaluate its purpose. Then, decide how it could limit the freedom established by the CCSS.
3. In Table 17.3, Pearson evaluates the assumptions underlying the CCSS. Discuss how each component is (or is not) addressed in the CCSS, and decide your stance on the implementation of the CCSS. How will this decision impact your own personal adoption of the primacy of the role of the CCSS in your classroom?

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