

Making the Shifts

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1 Here we are at the end of 2012. Who would have thought just three years ago that education would be in the position that it is in today—that 46 states, three U.S. territories, and the District of Columbia would have voluntarily agreed to share a set of standards for English language arts and literacy and mathematics? One would be hard-pressed to identify another initiative that has a greater potential to affect the teaching and learning that take place in so many classrooms across the United States. That being said, the widespread adoption of the Common Core State Standards has, to date, done little to change education. The adoption process itself was only the opening of the door. So, here we are as U.S. educators, 46 states, thousands of districts, and millions of teachers, all with the task of implementing these standards. Over the last two years, I have talked with thousands of educators about the standards, and I have realized that one of the biggest risks we currently face is full-speed implementation without an understanding of the changes that the standards require. When a new reform initiative comes around, our instinct as teachers and education leaders is often to buy new tools to support the work. But in a time when the market is offering an enormous range of materials, educators need a secure understanding of the standards so that we can choose our resources wisely.

2 As we put the standards into practice, it is important to focus on a few shifts that have the most significant effect on students. These shifts should guide all aspects of implementing the standards—including professional development, assessment design, and curriculum. When educators attend to three core shifts in English language arts and literacy as well as in mathematics, the expectations for teaching and learning will be clear, consistent, and tightly aligned to the goals of the standards.

The English Language Arts and Literacy Standards

3 The English language arts and literacy standards include expectations in reading, writing, speaking, and listening that apply in English language arts classes as well as in science, social studies, and technical subjects. If all students are to be ready for college and career by the end of high school, it is not sufficient to solely address literacy skills; we must also consider the texts to which students apply these skills. The standards address lagging literacy performance with three key shifts.

1. Building Knowledge Through Content-Rich Nonfiction

4 Reading content-rich nonfiction in history, social studies, science, and the arts in elementary school is crucial for later reading growth and achievement. Students need to be grounded in information about the world around them if they are to develop the strong general knowledge and vocabulary they need to become successful readers. Nonfiction plays an important part in building students' knowledge about content.

5 In today's classrooms, however, a great amount of time and energy has been invested over the years in creating extended literacy blocks that often crowd out time for learning social studies and science. During these blocks, students overwhelmingly read stories; on average, fewer than 10 percent of elementary English language arts texts are nonfiction (Duke, 2004).

6 The shift to building knowledge from content-rich nonfiction does not mean disregarding literature. Literature plays an essential role in building students' reading skills and developing their love of reading. The standards celebrate the role literature plays in building knowledge and creativity in students. As teachers implement the standards, our students will need to read rich literature as well as content-rich nonfiction in elementary school.

7 In later grades, history, social studies, and science teachers will equip students with the skills needed to read and gain information from content-specific nonfiction texts. In middle school and high school, nonfiction texts are a powerful vehicle for learning content as students build skills in the careful reading of a variety of texts, such as primary documents in a social studies class or descriptions of scientific observations in a science class.

2. Reading and Writing Grounded in Evidence

8 The Common Core State Standards emphasize using evidence from texts to present careful analyses, well-defended claims, and clear information. Rather than asking students to respond to questions they can answer solely from prior knowledge or experience, the standards prioritize questions that require students to read texts with care. Quality text-based questions, unlike low-level "search and find" questions, require close reading and deep understanding of the text.

9 The standards also require narrative writing throughout the grades. Narrative writing enables students to develop a command of sequence and detail that is essential to the argumentative and informative writing emphasized in later grades. The standards' focus on evidence-based writing and speaking to inform and persuade is a significant shift from current typical practice. Today, the most popular forms of writing in K–12 draw from student experience and opinion, which alone will not prepare students for the demands of college and career.

3. Regular Practice with Complex Texts and Academic Language

10 The standards focus on text complexity because the ability to comprehend complex texts is the most significant factor differentiating college-ready from non-college-ready readers. To prepare students for college and career, the standards include a staircase of increasing complexity in assigned texts.

11 The complexity of a text is determined by a number of factors, including syntax and vocabulary. To understand complex materials, students need support in developing the key academic vocabulary common to those texts (ACT, 2008). **These are words that commonly appear across genres and content areas and that are essential for understanding most informational text** (for example, *ignite*, *commit*, and *dedicate*). This shift toward complex text requires practice, supported through deliberate close reading.

The Mathematics Standards

12 For years, reports about the declining U.S. performance in mathematics on international assessments have called for greater focus in mathematics education. The Trends in International Math and Science Study (TIMSS) and other international studies have concluded that mathematics education in the United States is "a mile wide and an inch deep" (Schmidt, McKnight, & Raizen, 1997). The United States has a coverage mentality in which students are exposed to a broad array of topics but rarely study a concept in depth.

13 In high-performing countries, the design principle for mathematics education is a deep focus on a few topics with coherent progressions between topics. Surveys suggest that postsecondary instructors value greater mastery of prerequisites over a shallow exposure to a wide swath of topics that have little obvious relevance to college-level work (Conley, Drummond, de Gonzalez, Rooseboom, & Stout, 2011).

14 The Common Core State Standards for mathematics incorporate recommendations for greater focus and coherence in mathematics education. Recent research by William Schmidt (see Gewertz, 2012) reveals that states that had prior standards most similar to the Common Core State Standards show significantly better results on the National Assessment of Educational Progress (NAEP).

15 Implementation of the mathematics standards requires much more than new names for old ways of teaching mathematics. Many well-intending educators are spending a great deal of time doing alignment studies to figure out which grade levels various topics have moved to. Quality implementation means more than shuffling topics around; it requires an understanding of three core shifts.

1. Greater Focus on Fewer Topics

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Under the standards, instruction will need to go from a mile wide and an inch deep to much *less* wide and much *more* deep. Educators must significantly narrow the scope of content in each grade and deepen the time and energy spent on the following major topics:

- In grades K–2, concepts, skills, and problem solving related to addition and subtraction.
- In grades 3–5, concepts, skills, and problem solving related to multiplication and division of whole numbers and fractions.
- In grade 6, ratios and proportional relationships and early algebraic expressions and equations.
- In grade 7, ratios and proportional relationships and arithmetic of rational numbers.
- In grade 8, linear algebra.

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This shift represents a rare occasion in education, when we talk about what we can *stop* doing instead of the more typical approach of adding yet one more thing to do. Unless we first create time and space for the priority areas in math, the potential to significantly improve mathematics education will pass us by.

2. Linking Topics and Thinking Across Grades

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Mathematics is not a list of disconnected topics, tricks, or mnemonics; it is a coherent body of study made up of interconnected topics. The most important connections in the standards are vertical: The links from one grade to the next enable students to progress in their mathematical education.

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It is crucial to think across grades and examine the progressions in the standards to see how major content develops over time. For example, in 4th grade, students must "apply and extend previous understandings of multiplication to multiply a fraction by a whole number" (Standard 4.NF.4). This extends to 5th grade, when students are expected to build on that skill to "apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction" (Standard 5.NF.4).

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At a single grade level, educators can improve focus by tightly linking all topics to the major work of the grade. For example, in grade 3, bar graphs are not just another topic to cover. Rather, the standard about bar graphs asks students to use information presented in bar graphs to solve word problems using the four operations of arithmetic. Instead of allowing bar graphs to detract from the focus on arithmetic, the standards show how bar graphs can support that focus.

3. Rigorous Pursuit of Conceptual Understanding, Procedural Skill, and Application

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Rigor in mathematics is not defined by making math harder or by introducing topics at earlier grades, as is commonly assumed. Rather, rigorous mathematics refers to a deep, authentic command of mathematical concepts. To help students meet the standards, educators will need to pursue, with equal intensity, three aspects of rigor in the major work of each grade: conceptual understanding, procedural skill and fluency, and application.

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Each of these aspects of rigor has advocates. Some people like to stress fluency in computation, without acknowledging the role of conceptual understanding. Some like to stress conceptual understanding, without recognizing that fluency requires dedicated classroom work. Some people like to stress pure mathematics, without acknowledging that application can be highly motivating for students and that mathematical education should make students fit for more than just their next mathematics course. Some people like to stress application, without acknowledging that math doesn't teach itself. The standards do not take sides. Instead, they set high expectations for all three components of rigor.

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Conceptual understanding. Once we have a focused set of standards, teachers and students have the time and space to develop solid conceptual understanding. There is less pressure to quickly teach students how to get the

answer, which often means relying on tricks or mnemonics instead of understanding the reason an answer is correct or why a particular trick works.

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For example, it is not sufficient for students to know they can find equivalent fractions by multiplying the numerator and denominator by the same number. Students also need to know why this procedure works and what the different equivalent forms mean. Attention to conceptual understanding helps students build on prior knowledge and create new knowledge to carry into future grades. It is difficult to build further math proficiency on a set of mnemonics or meaningless procedures.

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Procedural skill and fluency. The standards require speed and accuracy in calculation. Teachers structure class time and homework in which students practice core functions, such as single-digit multiplication, so that they are more able to understand and manipulate more complex concepts. Developing procedural skill should not simply be memorization without understanding. It should be the outcome of a carefully planned learning progression.

We can't expect fluency to come naturally; we must address it specifically in the classroom and in our materials. Some students might require more practice than others, and there is no one way to develop speed and accuracy that will work for all students. All students, however, will need to develop a way to get there.

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Application. This is the "why we learn math" piece, right? We learn it so we can use it in situations that require mathematical knowledge. There are requirements for application all the way through the grades in the standards. But correctly applying mathematical knowledge depends on solid conceptual knowledge and procedural fluency. If we attempt to get students to start solving real-world problems when they lack that knowledge and fluency, the problem will just become harder.

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At the same time, we don't want to save all application for the end of the learning progression. Application can be motivational and interesting, and students at all levels need to connect the mathematics they are learning to the world around them.

Delivering on the Potential

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The Common Core State Standards are built on the best of the state standards and learning expectations that preceded them. Unlike many state-level initiatives, however, the standards offer much more than a distribution of topics across the grades. They make it possible for us to deliver on a promise to our children that they will graduate prepared for college and career.

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The standards cannot be seen as *one more thing* to put on our agenda. Instead, the standards must be integrated into our daily work in classrooms, schools, districts, and states. The shifts for English language arts and literacy and for mathematics reinforce the idea that a few things done well will have significant positive impact on our students. Let's focus on those few things together.

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