Building on the Common Core

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The Common Core State Standards could transform education—if educators translate them into new curriculum and instruction to get students college- and career-ready.

A potential sea change is under way in U.S. education. With stunning rapidity, 47 states and the District of Columbia have signed on to replace their state content standards with the recently developed Common Core State Standards. Even more remarkable in some respects, 45 states have joined the two assessment consortia working to replace their existing tests with new assessments aligned with the standards.

These developments create the opportunity for U.S. schools to move beyond test-prep instruction that fosters shallow learning—a practice that seems to have reached epidemic proportions in recent years. Implemented correctly, the common standards and assessments can vault education over the barrier of low-level test preparation and toward the goal of world-class learning outcomes for all students. Implemented poorly, however, the standards and assessments could result in accountability on steroids, stifling meaningful school improvement nationwide.

That's why all states that adopt the Common Core State Standards, as well as educators who will be affected by these standards, should make it a top priority to ensure that the new standards and assessments are used to focus instruction on developing key cognitive strategies and skills that students need for college and careers.

Overview of the Standards and Assessments

The Common Core State Standards, released in June 2010, were developed under the sponsorship of the National Governors Association and the Council of Chief State School Officers.[1] Thus, states controlled the process and content of the initiative.

The standards focus on two areas: English language arts and mathematics. In high school, however, the English language arts standards for reading, writing, speaking and listening, and language are also translated to literacy standards in history and social studies, science, and technical subjects. The expectation is that students will develop literacy skills specific to these subject areas in addition to what they

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learn in their language arts classes.The stated goal of the standards is to specify key knowledge and skills in a format that makes it clear what teachers and assessments need to focus on. Another goal is to raise the achievement bar to a level comparable to those of the best education systems in the world. The standards developers also hope that creating national consistency in expectations will lead to better uses of student learning data, higher-quality curriculum materials, teacher-preparation programs aligned with key content standards, and research results that identify what works.

The U.S. Department of Education is funding the development of common assessments to measure student learning of the standards in more complex and multidimensional ways than current tests do. Two consortia of states have received grants totaling approximately $350 million to design these assessments. Both of the consortia have proposed designs that include more frequent, real-time, formative measures to provide feedback on how well students are progressing throughout the school year. In addition, each consortium's plan includes items designed to capture evidence of deeper, more complex learning, such as online simulations, performance tasks, and projectlike assignments.

Developing Cognition, Making Connections

Much debate has taken place about the specific curriculum content the Common Core State Standards should include. Although the standards do address content, often overlooked in these debates is the fact that the standards identify the cognitive processes and learning strategies students need in order to acquire and retain curriculum content (see "Cognitive Strategies in the Common Core State Standards"). The ideal result of standards implementation will be to move classroom teaching away from a focus on worksheets, drill-and-memorize activities, and elaborate test-coaching programs, and toward an engaging, challenging curriculum that supports content acquisition through a range of instructional modes and techniques, including many that develop student cognitive strategies.

It is actually more difficult for students to retain the myriad bits of content they encounter during the school year when they are taught through test-prep. The brain functions by organizing related pieces of information into databases, or schema. Through nonroutine uses of the content in these databases, the brain creates the richer, deeper, and more complex connections necessary for understanding. Without these connections, isolated bits of information may not get incorporated into the larger schema and thus may not be retained.

The brain ruthlessly determines what is worth holding onto and what is not, and it discards that which it deems not worth keeping. Complex, nonroutine uses of information signal to the brain that something is important and needs to be integrated

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more fully into the brain's cognitive structures.

The Common Core State Standards are designed to develop these larger cognitive structures by identifying key knowledge and skills, organizing these elements sequentially and progressively, and then infusing more cognitive complexity into the knowledge-acquisition process. It is essential that the common assessments and the curriculums that support the standards recognize the importance of complex, challenging, nonroutine applications of knowledge.

How the Standards Can Support College and Career Readiness

What does it look like to translate standards into cognitively complex tasks and assignments aligned with college and career readiness? How should educators be thinking about developing the Common Core State Standards in ways that elicit deeper learning? One way is to look at the expectations students will encounter in college and careers and work backward from there.

In the past decade, my colleagues at the Educational Policy Improvement Center and I have analyzed the content of thousands of entry-level college courses and the expectations of the faculty who teach these courses.[2] One of our most consistent and important conclusions is that courses at two- and four-year postsecondary institutions expect students to be proficient in a range of key cognitive strategies. Although students certainly benefit from general content knowledge in key disciplines, such as English and mathematics, this knowledge is not sufficient if they lack proficiency with these strategies.[3]

Key Cognitive Strategies

Our research has led us to identify five key cognitive strategies (see fig. 1 online at www.ascd.org/ASCD/pdf/books/el_201103_conley_figure1.pdf):

Problem formulation. Having students formulate a problem before leaping directly to a solution causes them to first generate plausible hypotheses and potential strategies for solving the problem. This act of reflection gets students to entertain the universe of possibilities and makes them aware of the strategies they need to employ to solve the problem.

Research. With a strategy in hand, students can then collect the information necessary to solve the problem. This should involve data or information collection—in other words, research. Even in this information-rich age, students need considerable training in identifying relevant resources. They need to be able to collect the information from a wider range of sources than what they will encounter through a simple Google search or a visit to Wikipedia.

Interpretation. With information in hand, students need techniques for interpreting what they have gathered. Depending on the nature of the problem, these techniques can include pro-and-con lists; tables, grids, and matrices; outlines of key points; lists of

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consistencies and contradictions in the data; and findings organized by key aspects of the problem. Evaluation, a judging process in which rules of relevance are applied systematically to the collected data, is a skill developed over time through multiple opportunities for practice.

Communication. Students need to learn how to organize the output of their research and interpretation and then construct an argument or presentation that derives directly from carefully collected, analyzed, and organized information. Communication of this type requires multiple steps and iterations, not one draft dashed off and never revisited. Careful consideration of audience and the conventions of the subject area also guide communication strategies.

Precision and Accuracy. Through each step, learners need to exercise precision and accuracy consistent with the rules of the discipline within which the problem is embedded. For example, science requires accurate observation and measurement. English language has rules for grammar and syntax as well as for word selection. Mathematics rules specify how equations and formulas are written; the order of operations; placement of exponents; and numerous other specifications that are crucial to the accuracy of the solution. Precision and accuracy skills do not come naturally; students have to be encouraged to develop them systematically and strategically.

The Novice-Expert Continuum

We should think of students as moving from novice to expert in their strategic thinking as the result of frequent practice on progressively more complex tasks, assignments, and activities. As learners progress through the steps from novice to expert, they become less dependent on following rules literally and more able to make decisions within a larger framework. The expert thinker can see the whole when presented with only a subset of the pieces, whereas the novice needs to have all the pieces in place first before acting. The expert operates with a likely outcome in mind and is constantly testing assumptions on the way to a conclusion. The novice must proceed step by step in a literal and linear fashion.

The novice-expert continuum is important to keep in mind when constructing assessment systems because it allows for the construction of a vertical scale that sequences growth in strategic thinking across multiple grade levels. As learners develop their knowledge schema and gain more experience drawing knowledge from their schema, their performance progresses. Assessments that measure this progression in complex, nonroutine ways allow for the development of instructional programs that contain progressively more complex cognitive expectations. Common assessments and curricular systems can potentially use this novice-expert continuum to chart student progress toward the higher levels of cognitive functioning

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within a content area at each successive grade level.

Making the New Standards and Assessments Work

As educators design and implement curriculum aligned to the new standards and assessments, they can focus and organize their programs of instruction toward the goal of preparing more students for college and careers by adhering to several overarching principles.

Content mastery is not sufficient. As frustrating as it may be to hear, simply getting students to recall some facts or answer questions correctly on a test does not make them ready for college and careers—nor is it likely to guarantee high performance on the common assessments. We should view content acquisition as a means to an end, not an end in itself. If students do not have numerous opportunities to use content knowledge to solve interesting problems, grapple with key questions and issues of the discipline, and examine social issues, they will be unlikely to perform well on the common assessments.

Instruction needs to engage students in challenging applications of key content knowledge. Teachers and curriculum designers need to avoid the temptation to focus on test-prep activities that require little engagement in learning. To reach the new levels envisioned in the common standards and assessments, students must actively participate in their own learning. Curriculum that includes interesting problems, investigations, debates, simulations, games, Socratic questioning, presentations, projects, and other forms of learning that demand engagement will help maximize retention of key content and concepts.

To succeed with key content and key cognitive strategies, students need proficiency in a range of academic learning skills and behaviors. These behaviors include goal setting; study skills, both individually and in groups; self-reflection and the ability to gauge the quality of one's work; persistence with difficult tasks; a belief that effort trumps aptitude; and time-management skills. These behaviors may not be tested directly on the common assessments, but without them, students are unlikely to be able to undertake complex learning tasks or take control of their own learning.

Keeping Our Eyes on the Goal

As educators begin to translate the Common Core State Standards into practice, they have a new opportunity to think about what is important. The standards lay out a road map of major ideas, concepts, knowledge, and skills. The common assessments will measure a wider range of student learning than current tests do. If schools take advantage of this opportunity—redesigning curriculum and instruction in ways that fully engage students in cognitively challenging tasks—the result will be students who are better prepared to succeed in college and careers.

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Cognitive Strategies in the Common Core State Standards

The Common Core State Standards (www.corestandards.org) require students to develop and employ key cognitive strategies.

The Standards for Mathematical Practice (described in an introduction to the mathematics content standards) specify the following "varieties of expertise that mathematics educators at all levels should seek to develop in their students" (www.corestandards.org/the-standards/mathematics/introduction/standards-for-mathematical-practice):

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

The English/Language Arts Standards specify that students should develop the following cognitively complex skills:

- Analyze how and why individuals, events, and ideas develop and interact over the course of a text.
- Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
- Read and comprehend complex literary and informational texts independently and proficiently.
- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
- Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
- Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

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Endnotes

[1] For more information about the Common Core State Standards, see **www.corestandards.org**.

[2] See Conley, D. (2005). *College knowledge: What it really takes for students to succeed and what we can do to get them ready*. San Francisco: Jossey-Bass; and Conley, D. (2010). *College and career ready: Helping all students succeed beyond high school*. San Francisco: Jossey-Bass.

[3] The Educational Policy Improvement Center has developed the College-Ready Performance Assessment System (C-PAS), a means to teach and assess student proficiency with key cognitive strategies. C-PAS uses complex performance tasks aligned to Common Core State Standards to gauge student readiness for college and careers. More information about C-PAS is available at **www.collegecareerready.org**.

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