Center for American Progress

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Common Core State Standards Assessments

Challenges and Opportunities

By Morgan S. Polikoff April 2014

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Introduction and summary

The Common Core State Standards, or CCSS, represent a potential reboot for standards-based reform—an opportunity to address some of the design flaws that have diminished the policy's effectiveness in the past. This new set of standards can replace the various state benchmarks for learning that have dominated K-12 education policy in the United States for at least two decades. These new content standards, which clearly detail the knowledge and skills that all students should possess in mathematics and English language arts, or ELA, are intended to be supported with aligned assessments that reinforce the content messages of the standards and provide evidence of student mastery. When tied with consequential accountability, the CCSS and assessments can lead to improved instruction and, subsequently, improved student learning. This theory of change is intuitively appealing, and there is evidence of success at achieving intended effects on teachers' instruction[1] and student performance, including both test scores[2] and longer-range outcomes.[3]

The CCSS were created in response to the shortcomings of No Child Left Behind-era standards and assessments. Among those failings were the poor quality of content standards[4] and assessments[5] and the variability in content expectations[6] and proficiency targets[7] across states, as well as concerns related to the economic competitiveness of the nation's future workforce. The CCSS in mathematics and ELA were developed in 2009 by governors and chief state school officers in association with educators and researchers. The standards that they drafted were rapidly adopted in 45 states and the District of Columbia. In addition, two state consortia—the Smarter Balanced Assessment Consortium, or SBAC, and the Partnership for Assessment of Readiness for College and Careers, or PARCC—were created to develop new assessments aligned to the new standards.

In general, there is a good deal of enthusiasm for both the CCSS and the assessments forthcoming from the two consortia. Both major teachers' unions, the National Education Association and the American Federation of Teachers, have endorsed the standards, and polls suggest that teachers are generally optimistic about the potential effects of the standards.[8] Researchers have released a number of studies that have indicated that the standards are of higher quality than most of the state standards they replaced,[9] more coherent from grade to grade than prior

standards,[10] and capture essential mathematics and ELA content.[11] While the PARCC and SBAC tests have not yet been released, both consortia are planning several developments, discussed throughout this report, that would represent improvements over prior state achievement tests.

Despite the keenness for the CCSS and forthcoming tests, there are a number of likely challenges to the new standards and assessment systems. The purpose of this report is to outline some of these key challenges and offer suggestions for state and federal policymakers to mitigate them. The assessment challenges addressed in this paper pertain to the following seven areas:

- **Higher proficiency levels.** Proficiency level cutoffs on the new assessments will be more challenging than those under the No Child Left Behind Act, or NCLB. These higher proficiency cuts will result in more students failing than under prior assessments.

- **Technology upgrades.** The new assessments emerging from both consortia will require a significant investment in new computer technology. This will prove costly, especially in an era of ever-tightening district budgets.

- **Computer scoring.** New constructed-response items and performance tasks will require either human or computer scoring. Computer scoring will require technological advancement, and there are legitimate questions as to whether computer scoring will be able to assess the full quality of student responses to more ambitious tasks.

- **Content coverage.** New assessments will need do a better job sampling from the full domain of the standards—in other words, cover the full range of standards content, rather than predictably focusing on certain objectives and ignoring others. While the consortia have stated plans to solve this problem, it will be a tall order given the poor quality of prior tests.

- **Time investments.** The new assessments may require somewhat more time to take than prior state tests. While the time increase is relatively marginal, when combined with the general growth of assessment time, this may lead to concern regarding overtesting.

- **Validating uses for expanded evaluation.** Owing to the NCLB waivers, results from the new assessments are to be used for an increasingly wide array of purposes, including evaluating educators. These new uses will require new validity and reliability evidence.

- **Rollout coherence.** The new accountability systems developed through the waivers are also being implemented at the same time as the new assessments, and technical issues with the timing of the new assessments may complicate their rollout.

If the standards and assessments are to produce desired improvements in student outcomes, it is essential that policymakers and the developers of the CCSS assessments attend to the above seven challenges. To that end, this report offers several recommendations for assessment and accountability systems in the CCSS era. These recommendations include:

- Test developers in the consortia must put assessment quality and alignment issues front and center. This means ensuring the tests capture the full domain of the standards, maintain the cognitive demand level of the standards content, and include a wide variety of high-quality items.

- State and district policymakers promoting new uses for assessment data must provide reliability and validity evidence that supports their intended uses to ensure that appropriate decisions are made based on assessment data.

- To head off concerns about likely decreasing proficiency rates, actors at multiple levels—including state and district policymakers, researchers, educators, and test developers—must be proactive in explaining the new proficiency standards and why they matter.

- The federal government, states, and districts must create and implement more thoughtful teacher- and school-accountability systems that minimize the pervasive negative incentives seen under NCLB.

- The federal government must encourage assessment quality in several areas, including giving the consortia the freedom to measure proficiency outside of grade level and refining the peer-review guidance used to evaluate assessments.

In short, the proposed recommendations include both political and technical activities on the part of test developers, state and district policymakers and leaders, federal policymakers, and CCSS assessment consortia members. If met, these recommendations can help quell many of the concerns about the CCSS, new assessments, and school- and teacher-accountability systems.

Standards and assessments in the NCLB era and today

The No Child Left Behind era

To get a better sense of how the Common Core State Standards and assessments fit into the landscape of state and federal education policy, it is important to look at the evolution of standards from No Child Left Behind to the present. Under NCLB, states were required to create grade-specific content standards in mathematics and English language arts to assess student mastery of these standards using aligned assessments and to use the results to hold schools accountable for student performance. Bowing to states' historical control over education policies, the law left important decisions about the content of state standards, the content and form of student-achievement tests, and the rigor of state proficiency thresholds up to states.

Research showed that the discretion granted to states resulted in substantial variation in state implementation of NCLB along these dimensions. In terms of the content of standards and assessments, several studies showed sizable between-state variations in content expectations in state standards and assessments,[12] such that students from different states were expected to learn vastly different content in core subjects. Analyses rating the quality of state standards showed similar variation, with some states' standards rating as coherent and academically rigorous while "most [lacked] the content and clarity needed to provide a solid foundation for effective curriculum, assessment, and instruction."[13] State assessments in the NCLB era were only moderately aligned with their corresponding state standards,[14] sending conflicting messages to teachers about what to teach and limiting the quality of achievement data available to inform instruction.[15] Finally, analyses of state proficiency thresholds revealed that states established highly divergent definitions of the term "proficient," such that a student labeled proficient in one state might be below basic in another.[16] These were just a few of the ways that state policies responding to NCLB mandates were highly variable.[17]

Responding to these issues and seizing upon a brief policy window that opened when research demonstrated the substantial differences in standards for student learning,[18] state policymakers and educational experts came together in 2009 to create the CCSS. Later, two consortia of states, the Partnership for Assessment of Readiness for College and Careers and the Smarter Balanced Assessment Consortium, were awarded grants from the U.S. Department of Education[19] to create aligned assessments to measure student mastery of the CCSS. The CCSS and the consortia were designed to address each of the above issues by standardizing content expectations across states, raising the quality of state tests, and increasing and leveling the rigor of state proficiency cuts. The standards were also intended to address more fundamental concerns, such as issues related to international economic competitiveness and high college remediation rates.

The adoption of the CCSS was subsequently encouraged by the Obama administration through the Race to the Top program, or RTT. In addition, many states agreed to overhaul their standards, assessments, and accountability systems in order to take advantage of new flexibility from certain NCLB requirements that the Department of Education began offering states in 2012. As of December 2013, 43 states and the District of Columbia have received these flexibility waivers.[20]

The adoption and ongoing implementation of the CCSS is a remarkable achievement in the history of K-12 education policy in U.S. schools, especially given the repeated failures of earlier common standards efforts[21] and the historical degree of state and local control over educational decisions. At the same time, the effort is increasingly fragile due to resistance from both the political left and the right. While standards advocates have sometimes made breathless claims about the promise of the standards for improving K-12 education, most understand that the standards will only have positive effects on student learning if they are implemented thoughtfully and allowed to develop over time. Decades of educational research show that standards are not self-implementing—quite the contrary, as they require coherent, well-designed supporting materials and interventions to help educators understand how the standards are encouraging them to change their instructional practices.[22]

The promise of Common Core

There are a number of ways in which the Common Core State Standards are an important development and likely an improvement over what came before. Perhaps most fundamentally, the CCSS are viewed by most who have studied them as setting appropriately high standards for student learning. For instance, content-area experts in mathematics concluded their analysis of the standards by noting:

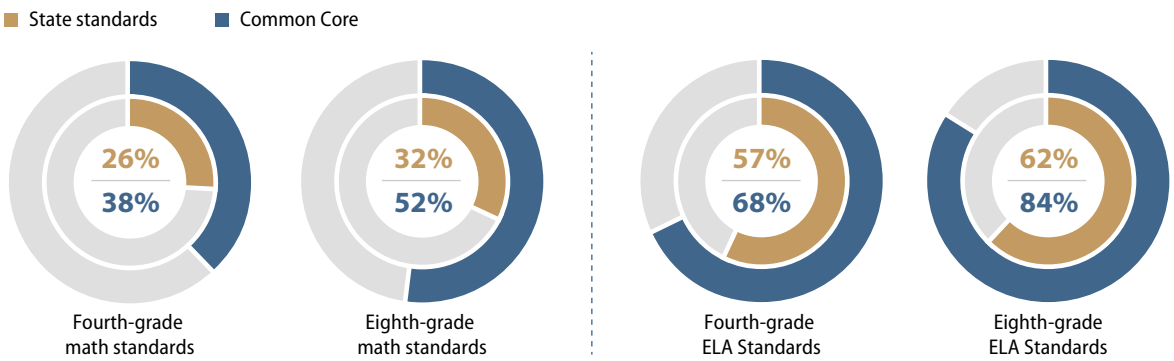
> *Our overall assessment of the [Common Core for mathematics] is largely favorable. In many respects, the [Common Core for mathematics] developers have set a new standard for the development of content standards. We appreciate that they have not taken an unduly narrow view of evidence but have instead displayed common sense by drawing on investigations of learning progressions that have been conducted using a number of different methodologies.*[23]

In general, reviews of the standards indicate that they are as strong as or stronger than the standards in a large majority of states in the NCLB era.[24] The CCSS have been evaluated as being more focused and coherent than the state standards they replaced, especially in mathematics.[25] Furthermore, the standards cover more conceptual skills and have less of a focus on procedures and memorization in both mathematics and English language arts.[26]

FIGURE 1

Common Core standards are stronger than many state standards

Common Core standards cover more rigorous skills such as demonstrating understanding or solving problems and have less of a focus on skills such as memorizing or performing procedures. The below charts show what percentage of Common Core standards focus on rigorous skills compared to state standards.



Note: In the figures that describe non-Common Core standards, averages across four anonymous states are displayed. States with data available on both standards in reading and math for grades four and eight were included. Through the Wisconsin Center for Education Research, analysts had previously coded standards items based on their cognitive demand for test takers.

Source: These data come from content analyses of standards and assessments conducted by researchers at the Wisconsin Center for Education Research and used in several previous studies, including, Morgan S. Polikoff, Andrew C. Porter, and John Smithson, "How Well Aligned Are State Assessments of Student Achievement with State Content Standards?", *American Education Research Journal* 48 (4) (2011): 965–995, available at http://www.uscrossier.org/ceg/wp-content/uploads/publications/state_assessments_polikoff.pdf; Morgan S. Polikoff, "The Redundancy Mathematics Instruction in U.S. Elementary and Middle Schools," *Elementary School Journal* 113 (2) (2012): 230–251, available at http://web-app.usc.edu/web/rossier/publications/66/The Redundancy of Math Instruction.pdf.

The standards are also important because they have the opportunity to leverage economies of scale in curriculum materials, assessments, professional development, and other areas. This is already taking place in the area of assessments: The groups working on designing assessments will likely be able to deliver higher-quality, more-sophisticated assessments at a much lower cost than would be possible if states were going it alone.[27] In terms of curriculum materials, a common complaint under NCLB standards was that curriculum developers were often beholden to the most populous states and that other states were given short shrift when it came to the content and quality of these materials.[28] The CCSS, in principle, allow for one text to apply across a much broader market—setting aside the 15 percent of content each state was allowed to add to the standards—potentially setting the stage for greater coherence of materials. Even online materials, which teachers increasingly use for the purposes of lesson planning, may benefit from these economies of scale. Lesson-sharing websites such as BetterLesson are increasingly focused on Common Core alignment. In January 2014, the National Education Association partnered with BetterLesson to create a new website where master teachers can share Common Core-based lessons online.[29] If there is a greater ability to evaluate the efficacy of the materials against the Common Core, these economies of scale could help improve the quality of curriculum materials.

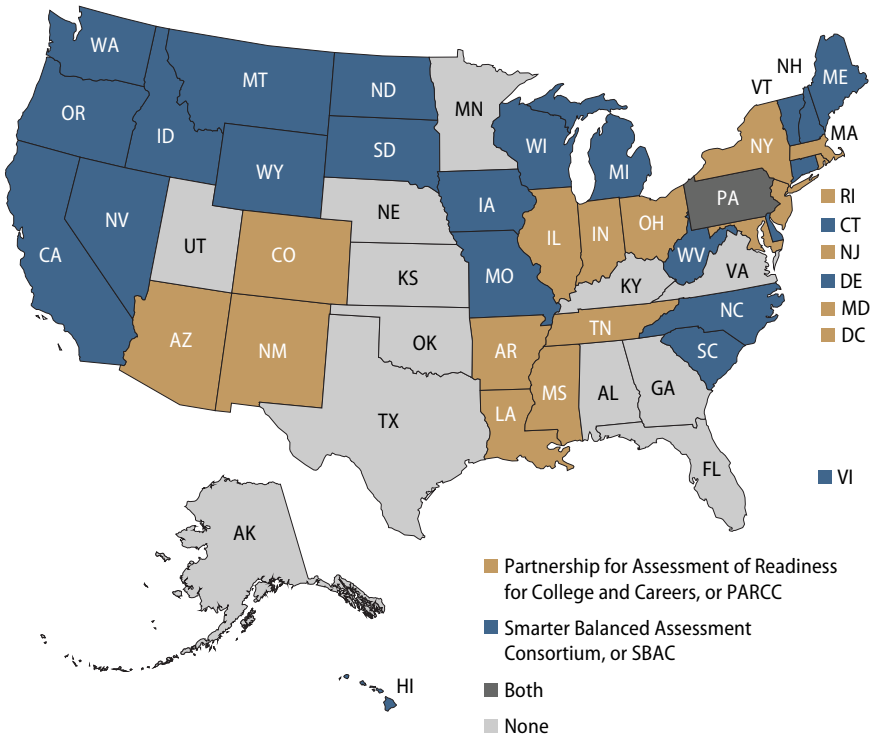
A third way the standards are an important development is in reducing the arbitrary, across-state differences in opportunity that plagued prior standards and assessment systems, which has several benefits. For one, it makes cross-state comparisons of performance clearer and starker—as evidenced by the fact that comparisons using the National Assessment of Educational Progress, or NAEP, are more meaningful than comparisons made using proficiency rates on state tests. For another, it reduces the costs associated with moving across states for both students and teachers; this may be especially important given the negative effects of transition on student performance.[30] Finally, in an increasingly global economy, reducing arbitrary, across-state differences may help put students from historically lower-performing states on a better path toward national and international competitiveness.

Of course, support of the standards is not universal. Some of the objections to the standards are mainly political—for instance, there is stated concern from both the political left and the right about the proper role of the federal government in standards-based reform. The adoption incentives that the Obama administration offered through RTT undoubtedly exacerbated these concerns.[31] Other objections are based on the substance of the standards. For instance, some have objected to the perceived diminished role of fiction in the ELA standards, as the standards call for a substantial proportion of reading materials by the time students reach high school to be informational text.[32] Others have expressed concern about the decision not to require algebra for all eighth graders in the standards—though the standards do not forbid eighth-grade algebra.[33] Some of these concerns may be allayed as the CCSS are implemented. However, the purpose of this paper is not to respond to substantive concerns about the standards. Given the reasons for potential optimism regarding the standards, as well as the popular support for them—particularly among those who know the most about the standards, teachers—implementation is the next critical step for the CCSS. Thus, the remainder of this report turns first to a description of how the assessments linked to the CCSS are being designed through unique groups of state organizations and then to strategies and policies to improve the implementation of the standards and the assessments.

FIGURE 2

Common Core assessment consortia membership

Of the 39 states and the District of Columbia taking part in consortia membership, 23 have signed onto SBAC, and 16 states and Washington, D.C., are members of PARCC. Pennsylvania is a member of both consortiums.



Source: Partnership for Assessment of Readiness for College and Careers, "PARCC States," available at https://www.parcconline.org/parcc-states (last accessed April 2014); Smarter Balanced Assessment Consortium, "Member States," available at http://www.smarterbalanced.org/about/member-states/ (last accessed April 2014).

One of the key lessons of two decades of standards-based reform is that assessment quality matters. It is among the most important drivers of standards implementation. Indeed, this is one of the core principles of standards-based reform—that coherence of standards and assessments is essential to reinforce the content messages of standards.[34] The importance of coherence is borne out in empirical research that shows stronger instructional responses in states with more-coherent policy systems.[35] Unfortunately, NCLB-era tests had numerous and severe shortcomings that undermined the standards. Consider, for example, that despite federal requirements to the contrary, state tests were often poorly or modestly aligned to the standards. This misalignment manifested itself in several ways:

- Tests routinely failed to reach the higher levels of cognitive demand called for in the standards.
- The state tests sampled content predictably from the standards.
- They left vast swaths of that content untested or undertested.[36]

Tests in the NCLB era often relied almost exclusively on multiple-choice items; while this is not always a concern, there is evidence that when tests contain a single type of problem, teachers narrow test-preparation activities in response.[37] Since the tests were pegged to the proficiency cut scores, they often suffered from floor and ceiling effects, which meant they were less effective at measuring student achievement at the top and bottom of the achievement distributions.[38] Together, these and other design flaws of NCLB-era assessments limited their utility for accurately measuring performance across the spectrum of student-ability levels and contributed to the law's unintended consequences and modest positive effects.

To improve on NCLB-era assessments and build new tests to capture the full range of the CCSS, the Department of Education invested $330 million from the American Recovery and Reinvestment Act to fund two assessment consortia—SBAC and PARCC.[39] Clearly, the Obama administration had a goal of reducing the number of different tests used to measure student proficiency nationwide. However, it funded two consortia rather than one, hoping to ensure competition, protect against the possibility of one consortium failing, and combat concerns about mandating a single system.[40] On the one hand, it might be preferable if there were one common assessment across all states to ensure common definitions of proficiency nationwide. But on the other hand, the politics of getting all states in one consortium may not be worth the small benefit that could be realized from

moving from two proficiency definitions to one—especially given that both of the consortia are planning to peg their cuts near the NAEP cut scores. Furthermore, there may be some usefulness in seeing how the two consortia play out over time. Regardless, there is no question that the two consortia are a dramatic step in the right direction to improve "commonness."

Recognizing the problems with NCLB-era assessments and understanding the importance of getting Common Core tests right, the Council of Chief State School Officers, or CCSSO, recently released a document outlining important principles for the quality of CCSS assessments.[41] These principles reiterate some of the key lessons learned in the NCLB era. The principles include:

- Requiring a range of cognitive demand
- Emphasizing writing, research, and inquiry skills
- Connecting mathematical skills to practices
- Focusing on student progress to readiness
- Providing timely data that inform instruction
- Ensuring appropriate accommodations for students with disabilities and English language learners

Each of these principles is a direct response to the challenges of earlier assessments, and meeting them all will certainly be a tall order. SBAC and PARCC have plans in place to address some of these principles, as indicated on their websites and in the assessment plans they have released, which are explained more fully in the text box. The testing consortia have laid out ambitious agendas that, if met, would dramatically raise the quality of assessments used to measure student proficiency over what was typical in the NCLB era.

One of the defining features of SBAC is that its tests will be computer adaptive. That is, as the student completes the examination, the difficulty of the items he or she takes will be based on how he or she has performed up to that point. Computer-adaptive tests allow for much more precise estimates of student performance, reducing the possibility of floor and ceiling effects.[42] Computer-adaptive tests can also be shorter—they require fewer items to reach the same level of accuracy as fixed-form tests in classifying students' performance. During the first few years of test rollout, SBAC plans to offer paper-and-pencil tests—which obviously cannot be adaptive—as needed. Another key feature of SBAC tests is their planned use of technology-enhanced items and performance tasks that will expand the item types to which students are typically exposed. In addition, SBAC plans to create item banks to be used optionally by districts or schools for making interim assessments. The SBAC tests will have four performance levels—thorough, adequate, partial, and minimal. SBAC's model is seen as very decentralized; the consortium is developing items, but the states are in charge of test delivery, scoring, and reporting, with the caveat that the participating states must use consistent definitions of proficiency.[43]

For PARCC, the assessments will be computerized, fixed-form tests. Unlike the SBAC tests, they will not be computer adaptive. The PARCC tests will also include a range of item types, and the consortium states that it seeks to measure the full range of the standards—including difficult-to-measure standards—and students at all achievement levels. Furthermore, PARCC is creating optional diagnostics at the start of the year and interim assessments at the midpoint of the year that will be able to be used to measure student progress during the school year in localities that choose to use them. In addition, PARCC is building optional formative performance tasks for grades K-12, along with mandatory nonsummative speaking and listening assessments for third through eighth grade. The PARCC tests will have five performance levels—distinguished, strong, moderate, partial, and minimal. Just as states following the SBAC model must report their scores on the SBAC scale, states following the PARCC model will be required to report their scores on the common PARCC scale, though they will not be required to use the same scores for policy decisions. The PARCC model is much more centralized than the SBAC model—the consortium or its vendors are providing all test-related services, including administration and scoring.[44]

Seven challenges facing assessment in the Common Core era

Test developers and assessment policymakers have an increasingly daunting task in the era of the Common Core State Standards. While the standards themselves remain the backbone of the K-12 policy system, assessments are clearly an integral component affecting the implementation of standards in the classroom. Given the wide array of uses for test scores—measuring student progress and proficiency, measuring school performance, and informing low- and high-stakes decisions about individual teachers—test quality is paramount. This section lays out seven challenges facing assessment developers and policymakers in the coming years. This is not intended to be an exhaustive list, but rather one that includes some of the most salient issues. If CCSS tests are to support the standards and help them achieve their desired outcomes, these issues will need to be addressed.

1. The proficiency challenge: Cut scores and proficiency rates

Under NCLB, states established their own proficiency cut scores on their state assessments. Not surprisingly, given the incentives of the law—with low-performing schools being sanctioned and potentially subject to restructuring after continued poor performance—some states chose to set woefully low cut scores.[45] In contrast, other states set more ambitious cut scores. In practice, the rigor of the cut score was not strongly related to the number of schools that failed under NCLB,[46] mainly because schools' proficiency targets—the proportion of students needing to be proficient for a school to meet its target—were based on the initial percentage of students proficient in the 2002-03 school year. Nor is there good evidence that states that set more ambitious proficiency cuts saw greater achievement gains in the NCLB era.[47] Nevertheless, the variability in state cut scores alarmed researchers and policymakers, who argued that vast differences in the definitions of proficiency sent conflicting messages to parents and others about school and student performance. Furthermore, low overall cut scores, resulting in large numbers of students being labeled proficient, are inconsistent with the substantial proportions of students who need remedial coursework upon enrollment in college.[48] Thus, raising and leveling expectations for proficiency was an explicit focus of the CCSS and related assessment consortia.

The idea of raising proficiency standards is an admirable one, as it makes little sense to declare large swaths of the student population proficient throughout K-12 and then send them to remedial education when they enroll in college. However, the practice of raising proficiency standards is likely to be fraught with political difficulties, considering that the two consortia have not yet established their cut scores. One difficulty is the political challenge of getting states to agree on cut scores that will necessarily make some states look better than others. Will Massachusetts and New Mexico—both PARCC states—agree on proficiency cuts given that Massachusetts has nearly twice as many students proficient in fourth-grade mathematics on the National Assessment of Educational Progress? Or will states with lower-performing students revolt once the new proficiency levels are established? Doing so, and returning to the highly variable state-chosen definitions of proficiency, would water down the consistency that the CCSS was intended to bring.

Another difficulty will be in getting states to stay the course even when proficiency rates fall dramatically. In states that have adopted CCSS-aligned assessments early, such as New York, Kentucky, and North Carolina, proficiency rates have typically fallen 30 percent or more.[49] These results can create political challenges if parents and legislators are not prepared for the results. This may be especially the case if the new, higher proficiency cuts are used to make decisions about individual students.

To reduce surprise and anxiety, states will need to make clear well in advance why the new tests and standards are important and what purpose they serve. The strongest arguments will likely focus on economic competitiveness and preparation for success in college, but each state may have its own arguments as to why the raised cut scores are necessary. Regardless, even with a well-orchestrated public relations campaign prior to the test scores' release, there will likely be considerable pushback around the proportion of students labeled as not meeting standards. It will take political courage on the part of state policymakers to withstand the pressure to water down standards.

2. The technology challenge: Costs and upkeep

The move to computerized testing offers many opportunities for improving assessment, some of which have already been discussed. But these new tests will not be free, and some policymakers and educators have expressed concern about the costs of implementing the new assessments. Indeed, some states withdrawing from PARCC have indicated testing costs as part of their rationale, though analyses of testing-cost data suggest leaving the consortia will result in little

savings.[50] One of the primary costs will be for the purchase of the computers to take the tests. The two consortia have established instructional-technology-purchasing guidelines that lay out the hardware and infrastructure requirements for administering the new assessments.[51] These guidelines include features such as screen resolution and size, internal memory, and bandwidth. In surveys of school districts, most responding districts met the consortia's requirements, but certainly some districts will have to upgrade the number of their machines, the software on those machines, the speed of the Internet, or a combination of these requirements.

Estimating the costs associated with the move to new computer-based assessments is perhaps more art than science. One type of expense is the one-time technology costs associated with purchasing hardware and upgrading technology to allow students to participate in computer-based assessments.

In addition to the one-time technology costs, there are the simple costs of taking the yearly assessments. Two recent reports from the Brookings Institution lay out these costs.[52] The reports estimate that prior state tests cost an average of $27 per pupil, ranging from less than $10 in New York to more than $100 in the District of Columbia per pupil. By way of contrast, the cost to administer the assessments is predicted to be between $23 to $30 per pupil in the new consortia, depending on the consortium—and more if states begin to drop out of the consortia, but not very much more. Because the assessments will be common to many states, fixed costs will be shared to some extent, and the savings from the economy of scale will be considerable. Other ongoing assessment-related costs include training, technology replacement and maintenance, and the costs of using and maintaining bandwidth.

Overall, the average costs between the old and new tests are fairly similar. But for about the same cost, states will have higher-quality assessments. And in and of themselves, even the high estimates of these costs from noted CCSS opponents are not especially high.[53] For instance, given that the K-12 student population includes approximately 50 million students, the ongoing technology costs amount to approximately $12.50 per student per year. Given that states spend an average of $11,000 per pupil per year, $12.50 for technology represents a small fraction of 1 percent of total expenditures.[54] Furthermore, the technology can certainly be used for instructional purposes as well, and smart districts will purchase technology that can be used outside of the testing window. It would be prudent for states and districts to not foolishly skimp on technology spending to save a few dollars.

3. The scoring challenge: Grading nonmultiple-choice items

Both of the major assessment consortia have plans to include a meaningful proportion of nonmultiple-choice items in their summative examinations. Both consortia have plans to include open-ended performance tasks in both mathematics and English language arts, with PARCC planning on these items being assessed earlier in the spring and SBAC planning to assess them during the regular year-end test.[55] The consortia also have plans to use other constructed-response items that require students to give numerical or text responses but that are not as long as performance tasks. Finally, the consortia plan to include technology-enhanced items that allow for the assessment of skills not easily measured with multiple-choice tests. As an example of a performance-task type, PARCC plans for the ELA assessment to include having students read multiple texts and analyze arguments in an essay format. An analysis by UCLA researchers highlights that the planned performance task and constructed-response items will be essential to ensure that the new tests meet the higher levels of cognitive demand called for by the standards.[56]

With new item types come new challenges. Scoring is foremost among these challenges for the open-response items being included in the new assessments. Scoring can either be done by humans or by using automated computer scoring. Researchers analyzing these plans have expressed skepticism that automated scoring can be done for the stated costs of the tests.[57] If automated scoring cannot be done for the given cost, this means that human scoring will be required. This will likely add substantially to the tests' costs and demands for human capital for scoring. Moreover, human scoring will also take much longer than automated scoring, undermining the promises of the consortia to inform instruction rapidly.

The two types of scoring have obvious advantages and disadvantages. For relatively simple types of constrained responses that are typical in mathematics tasks—for example, numbers, equations, and certain kinds of graphs and constructions—automated scoring is sufficiently advanced that human checkers are not needed. For essays, computer scoring is generally capable of scoring for grammar, usage, mechanics, spelling, and vocabulary, as well as some aspects of organization and responsiveness to the essay prompts. In contrast, computerized scoring may not be able to capture essay elements such as creativity, irony, or more artistic uses of writing. Furthermore, for constructed-response items calling for textual analysis, a key challenge is in developing a set of acceptable responses for the computer to use in grading. In terms of reliability, computer scoring can achieve levels of agreement comparable to the agreement among human scorers.[58]

Computerized scoring experts have created guidelines for the consortia to use in building their planned automated scoring systems, and these guidelines should prove useful as the technology in this area develops.

There is no doubt that the consortia's decisions to rely more on constructed-response items are motivated by concerns about the low quality of multiple-choice-only assessments used by many states under NCLB and the perceived negative effects of these item types on assessment quality and on teachers' instruction. Research for more than two decades has demonstrated that the nature of assessment items can shape teachers' instructional responses for better or for worse.[59] And there is good reason to suspect that the reliance on multiple-choice items contributed to NCLB tests' inability to meet the cognitive-demand levels called for in state standards. Thus, the consortia should be applauded for expanding the assessed curriculum to include more than the skills that can be captured using multiple-choice questions.

4. The coverage challenge: Constructing item banks to measure the standards

The principle of assessment in a standards-based policy system is that assessments will reinforce the content messages of the standards, sending teachers consistent messages about what to teach—the standards—and providing valid inferences about student mastery of those standards. Unfortunately, research suggests that NCLB-era assessments rarely lived up to this relatively fundamental goal. For instance, one study showed that NCLB-era assessments in ELA, mathematics, and science left vast swaths of standards content untested. This was particularly true on state ELA tests, where 50 percent or more of standards content—usually in areas of speaking, writing, and grammar and spelling—were not included on state assessments.[60] Studies have illustrated how state tests predictably sampled content from the same areas of the standards across years.[61] Thus, educators who pay even scant attention know in advance that some skills are more likely to be tested and focus on teaching those skills. This undermines the content messages of the standards, and it also likely contributes to test-score inflation.

An improved, CCSS-aligned assessment need not include every piece of standards content on every student test. Rather, the goal for a new assessment system would be that it samples content from year to year so that the questions on the assessments perfectly mirror the content in the standards over time. This ideal

system would have the additional benefit of reducing the likelihood of test-score inflation by diminishing the ability of educators to predict the content to be tested. The only rational teaching response to an assessment system such as this would be to focus on the content in the standards, which is exactly what is intended in standards-based reform policy.

There are several likely explanations for why state tests in the NCLB era were constructed in ways that led to these problems, and overcoming these issues may prove challenging for the consortia. For one, using similar test questions from similar content areas surely drives down item development costs, which are substantial contributors to total testing costs. For another, psychometricians are often understandably focused on addressing statistical issues, such as item or test bias, and parallel forms when constructing assessments. Thus, alignment is generally treated as an afterthought—only after the test is constructed do we verify its alignment to the target.[62] A third explanation is that some objectives in the standards may simply be too difficult to assess using traditional assessment formats.[63] Whatever the reasons, the result has been that test item banks do not fully capture the content in the standards and tests have been only modestly aligned to the standards. Simply moving to computerized testing will not solve the problem—the consortia will have to work to ensure adequate domain coverage in their item banks and across test forms.

5. The time challenge: Measuring what matters without undue burden

In the past year, a number of critics have begun to condemn the possibility of increased testing of students in K-12 schools. This backlash primarily comes from those who see testing as intertwined with punitive accountability policies that have moved from the school level to the teacher level. The movement is manifested in the rise of organizations such as Diane Ravitch's Network for Public Education.[64] These organizations point to the amount of testing time associated with the new CCSS assessments as evidence of a test-obsessed education policy system that undermines teaching and learning. The total testing time currently planned for summative assessments by SBAC is seven hours to eight-and-a-half hours, depending on the grade—with earlier grades spending less total time. For PARCC, the total time ranges from 8 to 10 hours depending on the grade. Under NCLB, state testing times generally ranged from four to eight hours or more, so it appears likely that time spent on state-mandated, summative assessments will increase in some places in the CCSS era. However, 10 hours of state-mandated, summative assessment represents less than 1 percent of the 1,200 or so hours in a typical school year.

Of course, state-mandated, summative assessments are just one part of the total testing time spent in K-12 schools. Some districts or schools choose to also use other types of assessments to measure readiness or gauge student progress during the school year—such as the Measures of Academic Progress tests or the Dynamic Indicators of Basic Early Literacy Skills, or DIBELS—and these locally selected tests add noticeably to testing time. Furthermore, the two consortia are developing optional interim benchmark assessments that are intended to gauge student progress toward proficiency throughout the school year, which districts and schools should consider using in place of some of the district-level assessments they currently use. There is some evidence that these sort of state- and/or district-selected interim tests can improve student performance.[65] Thoughtful benchmark assessments can be used to help teachers identify student misunderstandings and target instruction. However, they require additional testing time and are probably only useful insofar as they are well aligned with the summative assessments at the end of the year.

In some sense, states are in a predicament on the problem of testing time. Some educators have complained that the number of hours spent testing and preparing for tests is excessive and undermines instructional time. But the boost in test quality from the more robust and sophisticated item types to measure higher-order thinking may come in exchange for additional testing time.

Another complaint about NCLB-era tests was that they pushed educators to narrow the curriculum to focus almost exclusively on mathematics and ELA—the two subjects tested. Yet some critics are quite unhappy with proposals to expand testing to other subject areas, which would relieve the pressure to narrow the curriculum but would increase the amount of testing.

Given that parents and voters continue to see testing as an important measure providing accountability for school performance,[66] it is unlikely testing time or the scope of testing will decrease substantially in the near future. On the other hand, the consortia and state policymakers should be cognizant of growing concern over the amount of time spent testing and work to ensure that this time is well spent. School districts also have a role to play here: They should gauge the quantity and quality of their current testing efforts and verify that all tests are truly necessary, reducing or removing tests where possible.

6. The validation challenge: Validating assessments for new uses

State assessments of student achievement used in the NCLB era were primarily constructed and validated for one use—to measure student proficiency against a set of content standards. For this use, the validity evidence is relatively strong, with the possible exception of the extent to which a test adequately covers the content in the standards. State tests were also used in the NCLB era to make judgments about the performance of schools as measured by aggregate proficiency rates. Here, the validity evidence is weaker, given that 70 percent to 90 percent of the variation in student-achievement levels lies within schools.[67]

Under the recently approved state waivers to NCLB, state tests are being used for an increasingly wide array of decisions, some of which have to do with teachers. These include both high-stakes actions, such as informing the evaluation of teachers for tenure or other purposes, and low-stakes actions, such as making decisions about professional development. The new assessments have not been specifically designed for either of these uses, though they—along with other information—will be used for these purposes.

The use of student-assessment data for these policy purposes has caused some scholars concern. For instance, some researchers have questioned whether it is wise to utilize a single assessment to attempt to achieve the multiple, diverse goals of evaluating students, teachers, and schools—as opposed to, for example, a system of assessments that each have different purposes.[68] Furthermore, some have questioned the sensitivity of state assessments to instructional content and quality, calling into question their validity for discerning effective from ineffective teaching.[69]

On the other hand, research is quite clear that teachers are the most important within-school factor affecting student learning[70] and that teacher effects are long lasting and affect key student outcomes, such as future earnings.[71] Thus, there is an intuitive appeal to using student-achievement outcomes as a gauge of teacher effectiveness—to motivate and inform instructional-improvement efforts. That appeal is particularly potent given that a central goal of schooling for students is learning, and assessments that measure learning seem like an obvious tool for accountability. Recent recommendations from high-profile research have encouraged the use of assessment data for just this purpose, finding that performance-based measures are predictive of future student outcomes.[72]

Regardless of one's views on the merits of using student-achievement results to evaluate teachers, it is clear that such a policy raises the bar in terms of the demands for test quality. Thus, there remains a substantial amount of work to be done in terms of validating the new assessments for all their new intended uses. This is largely why the Department of Education has provided states with the flexibility to delay the use of teacher-evaluation results to inform personnel decisions such as tenure until the 2016-17 school year.[73] A dozen states have requested this flexibility, and six states have already been approved.[74]

7. The rollout coherence challenge: Integrating new assessments with accountability systems

The seventh and final challenge is implementing new assessments when many other policies are changing simultaneously. RTT and NCLB waivers have pushed states to adopt substantial policy reforms, most notably the complete redesign of school accountability and the creation of new multiple-measure teacher-evaluation systems. Without debating the merits of these policies, a transition to new assessments could conflict with some of these other ongoing policy changes.

One obstacle to integrating new assessments into accountability systems is in the calculation of school- and teacher-level growth scores on changing assessments. California recently backed off its plan to administer ELA and mathematics tests to only a subset of students, which would have made the calculation of growth measures impossible. Most states are planning to continue administering old assessments during the new test rollout, administering new assessments statewide anywhere between the 2012-13 and 2015-16 school years.

States that take this approach will have achievement data from old tests on which to base growth calculations, but how they will do so with data from the new assessments is not altogether straightforward. To be sure, many states are using growth measures that simply use students' relative ranks in each year to determine growth in a subsequent year;[75] these growth measures can be applied with old tests and new tests. But calculating growth scores this way requires the assumption that tests are tests; that is to say, the content and format of the test is irrelevant to the relative performance of students on that test, which is likely not true.[76] Setting aside the issue of whether this is a sound assumption to make, there is the issue of how to explain growth scores to educators and the public when the tests have changed in the middle of the process. It is as if a waiter's job

performance was measured by the average tips per table one month and by the total number of customer complaints the next, and the results were such that the waiter's growth was at the 80th percentile. Just because one could calculate growth scores on any two related measures does not make interpretation of the resulting scores particularly clear, so states and districts need to pay close attention to these measures and how they are compared across different assessments.

Recommendations for assessments in the Common Core era

The challenges laid out here are truly daunting, and failing to meet these challenges substantially increases the likelihood that the standards and assessment system will face increasing resistance and possibly rejection by educators, parents, and/or policymakers. If the consortia and advocates for assessment and accountability do not act quickly, this resistance will begin manifesting itself more frequently and forcefully. Because many who have judged the quality of the Common Core State Standards independent of political concerns view the standards and forthcoming assessments as being a likely improvement over what was in place before, the remainder of this report is focused on making recommendations to help address challenges and head off serious implementation problems.

Focus on test quality

Almost no one was satisfied with the quality of No Child Left Behind-era assessments, and there have been several recent, high-profile efforts to provide guidance on constructing higher-quality assessments.[77] If the CCSS are to achieve their intended effects, there is no denying that the new assessments must improve on those they are replacing in several key ways. Perhaps most importantly, the new tests must be better aligned to the CCSS than prior state tests were to their respective standards.

One way alignment must be improved is through raising the cognitive demand of the tests to meet the rigor of the standards. This will be an especially large challenge because the CCSS call for higher levels of cognitive demand than the typical state standards they replaced, especially in English language arts. For instance, an analysis found that approximately 40 percent of CCSS content in ELA was at the highest two levels of cognitive demand—analyzing and evaluating—and 31 percent was at the lowest two levels—memorizing and performing procedures. In contrast, typical state standards in the NCLB era had 24 percent of content at the top two levels and 38 percent at the bottom two levels of cognitive demand.[78]

Furthermore, state tests in the NCLB era systematically failed to meet the higher levels of cognitive demand in their corresponding standards,[79] so the necessary increase in cognitive demand will be substantial.

One of the primary responsibilities of the consortia, therefore, is to ensure that the representation of cognitive demand on the new assessments mirrors that of the standards. Recent analyses indicate that the nonmultiple-choice items planned for the consortia will be essential to meet the cognitive-demand expectations of the standards.[80] Many of the SBAC and PARCC sample items offered on the consortia's websites ask for more-advanced skills. It is clear from these examples that the consortia are attending to cognitive demand in creating each test item; the next priority is ensuring the tests adequately represent the cognitive-demand expectations of the standards. If CCSS assessments cannot meet the cognitive demand called for by the standards, the tests will undermine the instructional changes called for by the standards and potentially contribute to reductionist responses.

A second way alignment must be improved is by ensuring the tests cover the full domain of the standards. This means constructing item banks that do not reliably leave certain content standards untested. To accomplish this, there are several steps test developers should take. The first is at the item-writing phase, which should be guided by the objectives in the standards such that assessment items are explicitly written to cover each objective—and perhaps in equal proportions, unless there is a compelling reason for another weighting. This will be especially important in ELA, where the standards include writing and speaking skills, among others, that have historically gone unassessed.[81] Of course, some of these skills may be difficult to write items for, and the consortia have plans for these difficult-to-assess skills, which are described in detail on the consortia's websites.

Another thing to consider is moving the alignment argument so that it is a forethought of test construction and validation, rather than an afterthought, as is currently the case. That is, test developers might use recent advances in alignment methodology to create better-aligned tests that more fully cover the domain of the standards.[82] These approaches can help improve alignment using existing item banks and also guide item writing for areas that are not well represented in the tests. However, they may be more suitable to the fixed-form assessments created by the Partnership for Assessment of Readiness for College and Careers than the adaptive tests of the Smarter Balanced Assessment Consortium.

Finally, test developers and policymakers should take a more critical eye toward alignment evidence, perhaps by using multiple methods of evaluating test alignment to standards, to help ferret out alignment problems before they undermine the standards. Of course, there are also other elements of test quality on which test developers should focus, and the consortia have each laid out fairly detailed plans regarding test quality. The consortia should be held closely to these plans, as the quality of tests is paramount for ensuring the response to the standards is not reductionist.

Improve validity and reliability evidence

Another important element of test quality that needs improvement is the provision of validity and reliability evidence, particularly with regard to the multiple kinds of inferences being made on the basis of test results. Generally speaking, validity refers to the extent to which the judgments made from test results are accurate and appropriate. In contrast, reliability refers to the extent to which the results are consistent or stable across time or forms of the test. The burden for meeting this element lies less with test developers than with states and districts that are using new assessment results to inform decisions about individual students, teacher evaluation and professional development, and school ratings.

Reliability is a necessary but not a sufficient precursor to validity. Ratings based on new assessments should not be excessively volatile, or they will send conflicting messages to educators and the general public. This is especially important for new teacher- and school-evaluation systems based on measures of student-achievement growth. Given that growth measures are considerably less reliable than proficiency-based measures of performance,[83] there is the potential for substantial year-to-year fluctuation in evaluation ratings. States and districts should consider using multiple years of data to smooth out fluctuations in ratings, which would enhance the credibility of performance ratings. Regardless, policymakers should provide clear reports of the reliability of classifications.

Beyond reliability, it is essential that the validity evidence for new kinds of inferences be solid. Each intended use of an assessment should have a sound, plausible validation argument that leads from the test scores to the statements or decisions made in the interpretation.[84] For educators and the public to trust the data emerging from school-accountability systems, validity and reliability evidence should be made clear and disseminated widely. Producing simple narrative reports that describe the intended uses of student-achievement test results and how the evidence supports the use of achievement data for these purposes will go a long way toward shoring up unwavering support.

Stressing the importance of new proficiency definitions

Another key decision to be made by state policymakers is where to set proficiency cuts on the new assessments; here, too, validity evidence is important. One of the key goals of the common standards movement was to create more common definitions of proficiency nationwide. Moreover, it was hoped that the new proficiency cuts would be higher in order to more accurately identify readiness for college or careers. As mentioned above, this means that proficiency rates are likely to drop in most locales, and students who were previously identified as proficient may no longer be so under the new standards. This change is sure to cause blowback among educators and the general public.

As has been mentioned, to combat the blowback, states will need to focus arguments on how the new tests and standards better prepare students for economic competitiveness and success in college. This will require a well-orchestrated public relations campaign well in advance of the test scores' release, as there will likely be considerable pushback around the proportion of students labeled as not meeting standards. Managing this pushback is crucial, as the drive to lower proficiency standards and water down the power of higher expectations will be strong. Actors at multiple levels can play important roles in making the case for the new standards.

Perhaps the strongest case for the higher proficiency standards is that prior proficiency cuts did not offer accurate reflections of student readiness for college. Under some state proficiency guidelines, for example, 80 percent or more of students were identified as proficient in mathematics and ELA. Yet college enrollment rates are slightly more than 40 percent[85]—and substantial proportions of high school graduates who are not enrolled in college are unemployed. Even among those graduates who do enroll in college, remediation rates are at least 20 percent[86]—and far higher at two-year and less-selective institutions—again illustrating the disconnect between stated proficiency and actual readiness for success in college or careers. It is clear that prior state proficiency cuts were sending misleading messages to educators, parents, and students about achievement. The higher standards coming from the consortia should help remedy this problem. Policymakers and educators should be prepared to make this argument to parents and students to help them understand the reasons for the new, higher proficiency cuts.

Another important case for the new proficiency cuts is to provide comparable measures of student performance across states. Again, the variation in prior state proficiency cuts sent confusing messages about student performance. A series of reports written during the NCLB era showed that proficiency cuts were generally low—almost all were lower than the NAEP proficiency cut, and many were lower than NAEP's basic score—and highly variable.[87] Clearly, putting states on a common proficiency scale has advantages in terms of understanding relative performance against the standard. Given an increasingly national and even global economy, it makes little sense to have wildly different definitions of proficiency based on ZIP code. Again, policymakers and educators can make this case to parents and students, so they understand why proficiency rates are changing and what the benefits are of common expectations.

Given the impending drops in the percentage of students who earn a score of proficient on the new tests, it is imperative that policymakers and educators get in front of the criticism. Communication should first be targeted at parents. Possible approaches include sending home materials to help parents understand the reasons behind the changes and the intended benefits, as well as discussing the new expectations at parents' nights or in conferences. More generally, the public also needs to be aware of the changes. Approaches here include public service announcements supported by industry, which is generally supportive of the standards; editorials aimed at making the case for the changes; and news stories describing how they will affect students. No state needs to reinvent the wheel here: Kentucky provides an example of a state that has rolled out new proficiency guidelines with relatively little negative reaction, and its experience and tactics could serve as a useful guide. States should also consider—and many already are considering—easing the transition to new and higher cut scores, especially for tests used to make decisions about individual students.[88]

Supporting new tests with good accountability policy

The quality of new assessments and standards is important, but it is equally, if not more, important that the tests be supported with well-designed accountability policies. Accountability policies that incorrectly identify schools or teachers that are not performing well or that are overly punitive will dramatically undermine the promise of new standards and assessments. States have had substantial opportunity to design more thoughtful accountability systems through flexibility

granted by the Department of Education. Some states have moved to incorporate measures of student growth, expanded the use of nontest-based outcomes, included subjects outside of mathematics and ELA, and explicitly focused on narrowing achievement gaps in new school-accountability systems. Some of these new accountability systems will go a long way toward identifying the schools most in need of intervention and targeting appropriate sanctions or support, but some systems are not a marked improvement over NCLB's system.

As for teacher accountability, one of the focuses of the NCLB flexibility waivers and the Race to the Top program was on expanding accountability from schools to individual educators; strengthened teacher evaluation is now law in many states and districts as a result. The design of these policies will almost certainly affect the extent to which they reinforce or undermine the standards. If well constructed, the assessments will reduce the negative consequences of teachers' narrowing their instructional focus to what is tested. In a world where tests perfectly capture all we want students to know and do, teaching to the test may not be a bad outcome.

Because CCSS tests will not be perfect, however, evaluation policy design is important. For instance, an evaluation system that uses student-growth measures that do not fully account for student characteristics may encourage teachers to avoid teaching certain groups of students. And policies that tie student-learning objectives or other nonstate test measures of student performance to high stakes might lead teachers to game the system by setting easily attainable goals. The next few years will be an opportunity for districts and states to address these challenges. And because the Department of Education has provided states with the flexibility to delay the use of teacher-evaluation results to inform personnel consequences, such as tenure, until the 2016-17 school year, they will be able to test out their evaluation systems and new tests in a lower-stakes environment.

Encourage good assessment practices

The U.S. Department of Education can play an important role in improving the quality of assessments by encouraging good assessment practices along several dimensions. While of course there are concerns about federal overreach associated with the consortia, the federal government clearly has a role to play to help ensure good tests.

Measuring proficiency levels is clearly important—when students are set to go off to college, what matters most is the degree to which they are ready, not how much progress they have made over the past year. Nevertheless, one of the more onerous restrictions required by NCLB policy was the requirement that states measure the proficiency levels of all students on grade-specific standards. While this requirement was perhaps needed in an era of fixed-form, paper-and-pencil tests, the consortia, and particularly SBAC, have moved beyond fixed-form and need flexibility. Forcing all students to take tests on grade level ensures that low-achieving and high-achieving students will be poorly measured, resulting in less useful information at the extremes of the achievement distribution. Especially as tests are used to measure growth, this may unfairly affect teachers who teach students of either very high or very low achievement, and it may also limit the utility of tests for helping target interventions to low performers, which is admittedly not a major use of existing state summative tests.

There is reasonable concern among civil rights groups and disability advocacy groups that allowing tests to measure student performance based on grade level could lead to below-grade-level instruction for students from these groups, but there is little reason to think that would be the case if test results based on a combination of grade-level proficiency and student growth are used for accountability purposes. As the computer-adaptive tests in SBAC use students' early responses to select easier or harder items, it makes very little sense to constrain these tests to only include grade-level content. We should instead seek an accurate measure of each child's performance relative to the range of K-12 content. Doing so will improve the measurement of each student's performance and facilitate more accurate growth measures.

The federal peer-review guidelines for ensuring test quality also have an important role to play in addressing the alignment problems mentioned previously. While the peer-review guidelines encourage the use of alignment methods that capture multiple dimensions of alignment—cognitive complexity, content, and process alignment—it is clear that these guidelines were not successful in resulting in tests that actually were well aligned. These guidelines should be revised to encourage multiple alignment methods to triangulate results from alignment studies. The guidelines could also be revised with specific criteria that would help ensure tighter alignment.

For instance, one guideline could be that the cognitive-demand allocation on the tests differs by no more than 10 percent from the cognitive demand called for by the standards. If this guideline had been in place under NCLB, many of the state tests would have failed. Guidelines such as this would go a long way toward encouraging the type of assessments envisioned by the architects of the standards and the standards-based reform movement. There are surely other ways the peer-review guidelines could be improved as well.

The federal government could also encourage better assessment practices through the flexibility-waiver-renewal process and perhaps targeted incentives or grants to states. The waiver process gave states substantial flexibility around what grades and subjects to test and use for accountability. However, the majority of states chose to continue using only ELA and mathematics for accountability.[89] States may want to consider including, at a minimum, science test results in school-accountability classifications. Given that all states are required to test science in at least three grades, this change would cost very little but would reduce the narrowing effects of accountability policy.[90] The U.S. Department of Education could also actively encourage the creation or adoption of tests in other subjects and perhaps offer targeted grants to districts or states that demonstrate a clear commitment to maintaining a broad, rich curriculum. All subjects need not be tested in all grades to have the effect of limiting the curriculum narrowing that has taken place in the past decade.

Conclusion

Most thoughtful analyses of the Common Core State Standards have indicated that they hold promise for improving the quality of K-12 schooling in the United States. And while states and districts are moving full speed ahead with standards implementation, there is some growing resistance from both the political left and right. It is essential that CCSS advocates work to ensure quality implementation, and perhaps no supplementary policy matters more for standards implementation than assessment quality. The low-quality assessments from the No Child Left Behind-era dramatically undermined the law, contributing to its negative, unintended consequences, and there are important lessons to be learned for the renewed standards movement.

The purpose of this report was to lay out some of the challenges facing test developers and policymakers in the Common Core era and offer suggestions for educators, test developers, and policymakers to address these challenges. These challenges include technical and political issues that are not easily addressed. Five recommendations for meeting the challenges were offered, though there are undoubtedly other ways to address educators' and parents' concerns. Perhaps the most important recommendation is to act thoughtfully and not punitively in the immediate future, giving educators the time to implement the standards. In contrast, if poorly designed accountability is pushed in the next several years, there is no question that it will undermine the CCSS and lead to an expansion of the kind of resistance that is already nascent.

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