Standards Heading Off Track

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It is now almost exactly five years since a commission of the National Governor’s Association and the Council of Chief State School Officers released Common Core State Standards for Mathematics. Produced in a one-year whirlwind of activity by a three-person author team, with consultation from a small number of mathematicians and mathematics educators, the CCSSM promised guidance for mathematics education in the United States so it could, “become substantially more focused and coherent in order to improve mathematics achievement.” The authors also claim, “The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout the mathematics standards.”¹

Despite reservations about specific features of the hurriedly developed new national standards for K-12 mathematics, state and local curriculum leaders and teachers in 46 states have made good-faith efforts to implement the CCSSM content and mathematical practices recommendations. Authors and publishers of instructional materials have also worked hard to provide textbooks and ancillary resources that are aligned with the standards document. With generous funding from the U. S. Department of Education, two consortia² have developed formative and end of year assessments to measure progress of each public school student in grades 3 – 11 toward the ambitious Common Core goals. Unfortunately, it is this national testing program that threatens to turn the unprecedented national standards movement into a regressive force that does not, “build on the best of high-quality math standards from states across the country (or) draw on the most important international models for mathematical practice.”

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¹ Common Core State Standards downloaded from http://www.corestandards.org/Math/

² The Partnership for Assessing Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC).
The CCSSM outline K – 12 learning progressions for mathematical concepts and skills in number, algebra, geometry, and statistics and describe eight mathematical practices that students should develop and refine. At each grade level K - 8, the Standards describe critical areas that should be given special focus in the curriculum and instruction. For the high school grades the CCSSM offer two pathways to the goal of preparation for college, careers, and life—the traditional U. S. layer cake curriculum consisting of year-long courses in Algebra I, Geometry, and Algebra II and the, “approach typically seen internationally that consists of a sequence of three courses, each of which includes number, algebra, geometry, probability and statistics.”

When the two assessment consortia began developing tasks to assess individual student achievement of those content and practice objectives, they soon realized the enormity of that task. So they simply redefined the Common Core State Standards. In elementary and middle school grades, they chose to focus on a much smaller set of specific content standards3 and to essentially ignore the mathematical practice standards. At the high school level, the PARCC consortium—seeking to offer end-of-year tests for both traditional U. S. and international pathways in grades 9, 10, and 11—adopted an integrated curriculum content framework that was written hastily by consultants to its managing partner Achieve.4

Problematic Consequences

When schools, teachers, and students make choices about how to focus their energy in education, they quite reasonably focus on content specifications of high stakes tests. So, despite the fact that the CCSSM document claims, “The standards themselves do not dictate curriculum, pedagogy, or delivery of content,” the assessment specs from PARCC and SBAC are deeply influential as states implement the Common Core. The consequences promise to be devastating for U. S. mathematics education in at least three significant ways.

3 Notably moving most geometry, measurement, statistics, and probability standards into a category described as “additional or supporting clusters or others.”

4 http://www.achieve.org
**K – 8 Curriculum Re-Defined by EdReports.** On March 26 an organization called EdReports released what it described as ‘consumer reports’ analyses of textbooks available for K- 8 mathematics. The EdReports review concluded that only one relatively obscure K – 8 textbook series can be considered well-aligned with Common Core State Standards for Mathematics.

As has been pointed out in critical responses from authors and publishers of textbooks that did not meet expectations, the EdReports review teams (consisting of teachers, principals, and instructional coaches in schools and districts, but apparently no mathematicians or educational researchers) defined ‘alignment’ in a very narrow sense that does not reflect the full range of *Common Core State Standards*. Instead, they chose to focus attention only on topics the PARCC and Smarter Balanced testing consortia have chosen to emphasize. The most common causes for a textbook failing to meet EdReports alignment expectations were: (1) not focusing enough on that narrow subset of Common Core objectives; or (2) daring to introduce a mathematical term or concept *earlier* than the grade level prescribed by authors of the *Common Core Standards*.

The ‘evidence’ provided to justify critical ratings suggests that EdReports reviewers were looking only for verbatim correspondence between textbook contents and language in the precise grade-by-grade specifications of *CCSSM*. The reviews did not report and did not even seek empirical evidence that use of the textbooks in question has resulted in student learning like what the *CCSSM* expect.

One could argue that some information about the quality of available school textbooks is better than no information at all. However, identification of high quality instructional materials requires much deeper analysis and information than the flawed EdReports analyses provide.\(^5\)

**Limiting High School Options.** EdReports has not yet conducted an alignment review of high school mathematics textbooks. But schools considering new textbook adoptions,

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especially schools in PARCC states, are already making decisions based on the test-driven criterion: Does the book align with the Achieve/PARCC model for integrated high school mathematics? Authors of the CCSSM suggested that the integrated curriculum pathway described in Appendix A to the Standards was only an illustrative example of what such an international model might look like. But state departments of education, school districts, and teachers not familiar with integrated mathematics programs tend to view the untested Achieve/PARCC model as the pathway that ought to be followed if students are to be successful on the high stakes assessments.

That impact of CCSSM testing at the high school level is deeply unfortunate. Over the past two decades major U.S. curriculum research and development projects have designed, developed, and demonstrated efficacy of several different integrated models for high school mathematics. There is no such proof of concept for the Achieve/PARCC integrated curriculum model. In fact, the only instructional materials available to support implementation of the Achieve/PARCC integrated scope and sequence framework are from publishers who have re-sequenced chapters of their algebra, geometry, and advanced algebra books in the name of ‘integrated mathematics.’ Those textbooks match the Achieve/PARCC model topic-by-topic with little or no attention to coherence, connectedness, and unification of the subject or embedding of the mathematical practices as a way of learning and applying mathematics. Schools are purchasing the cut and paste texts on the basis of their narrowly defined alignment with the Achieve/PARCC model, not on their merit as empirically proven resources for high school curricula and instruction.

Assessments of Dubious Quality. As if hijacking and redefining the Common Core State Standards were not enough, the assessment consortia have produced test instruments that have been harshly criticized by thoughtful members of the mathematics education community. For example, after analyzing sample test items from the Smarter Balanced Assessment Consortium, Steve Rasmussen concluded, “(On) question after question, the tests: (1) violate the standards they are supposed to assess; (2) cannot be adequately answered by students with the technology they are required to use; (3) use confusing and hard-to-use interfaces; or (4) are to be graded in such a way that incorrect
answers are identified as correct and correct answers as incorrect.” Rasmussen noted that, “This spring, tests developed by the Smarter Balanced Assessment Consortium will be administered to well over 10 million students in 17 states to determine their proficiency on the Common Core Standards for Mathematics,” and he argued that, “No tests that are so unfair should be given to anyone. Certainly, with stakes so high for students and their teachers, these Smarter Balanced tests should not be administered. The boycotts of these tests by parents and some school districts are justified. In fact, responsible government bodies should withdraw the tests from use before they do damage.”

Implications and Actions

The most common arguments in support of Common Core State Standards for U. S. mathematics stress the need to replace traditional curricula that are ‘a mile wide and an inch deep’ with internationally benchmarked programs that will push American students to achieve at higher levels. The CCSSM set ambitious goals, and it is quite reasonable to devise assessments that will measure student progress toward those goals. But, as we have argued above, actions of the two dominant testing consortia are having deeply problematic (even if unintended) consequences. They have narrowed the scope of the Standards in undesirable ways, and they have encouraged implementation of the Standards in form but not substance. As a result, the PARCC and SBAC assessments are discouraging use of curriculum models and instructional materials that are demonstrably effective in favor of models and materials that are only superficially aligned with the new Standards. Furthermore, the instruments they have developed to measure student achievement are of questionable quality for such an important national endeavor.

Everyone expects that results of the first CCSSM assessments will show disappointing attainment of the new Standards. There will be many plausible explanations for those results, not least the fact that students tested in upper elementary, middle, and high school grades will not have experienced curricula or instruction that the Standards prescribe as prerequisites. Optimists will argue that we have to wait at least five years (or more) to see the full positive effects of the new Standards regime. But what seems most likely to be the

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case five years from now is continued disappointing student performance on national and international assessments because teach-to-the-test pressures will have led to adoption of inferior curriculum models and instructional materials, and poor quality assessment instruments and procedures will have produced misleading information about student learning.

So what should states, school districts, individual schools, and teachers do? The simple first recommendation is to implement the full CCSSM content and mathematical practice guidelines, not the narrow PARCC or SBAC test specifications, and to choose coherent supporting instructional materials that have been carefully developed and tested. A second appropriate recommendation is for states to withdraw support for and participation in the two testing consortia that actually stand in the way of progress that might be realized from full implementation of the CCSSM.

A number of states have already dropped out of PARCC and SBAC, and partisan political arguments have led some states to reject the whole concept of a national core curriculum. Many of us in mathematics education believe there is genuine potential for positive results from implementation of the content and mathematical practices of the CCSSM and from thoughtful revision of those guidelines as a result of experience. However, much serious harm can result from allowing misguided and flawed activities of PARCC, SBAC, and the EdReports textbook reviews\(^8\) to send the Standards movement off track.

\(^8\) Concern about the harmful effects of flawed EdReports reviews prompted leaders of the NCTM and NCSM to write An Open Letter to the Education Community on May 20, 2015. The letter faults the process used and conclusions by EdReports and calls for withdrawal of the current K-8 reviews and the Appendix A model for integrated high school curriculum.