



April 2011

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Commentary

The Value of Math

Mathematics education in the U.S. has always been a complicated issue: on the one hand, there is a general consensus that mathematics is a fundamental skill that all students should possess, yet there is also the common – and false – perception that not all students are "good at math" and that it is unfair to expect all kids to take advanced mathematics in order to graduate. As an editorial this week in the [Houston Chronicle summed it up](#): "In this country, we do seem to assume that folks from certain ethnic groups (think Asians) and certain sexes (think male) are the math geniuses, and the rest of us haven't got a clue beyond whatever we can dope out with our pocket calculators. That approach is just so wrong – and the consequences are profound. If we accept that faulty premise, we arbitrarily limit the national talent pool for math, engineering and the sciences – the very pursuits that hold the keys to innovation and progress."

It was, in part, this disconnect between what is expected of *some* kids compared to what should be expected of *all* kids that led Achieve and its partners in 2004 to set out to identify the knowledge and skills most demanded of students in first-year math and English college courses and in careers that offer pathways to advancement. After conducting more than two years of research with employers and first-year college professors at two- and four-year institutions, the American Diploma Project (ADP) recommended that to be prepared for their next steps, high school students should learn the content typically taught through an Algebra II (or equivalent) course, recommendations that were supported by other subsequent research.

More recently, Achieve conducted international benchmarking studies, which revealed that math through Algebra II is a minimal requirement for all students in many high-performing countries, with some countries having even higher expectations for all of their students. The Common Core State Standards (CCSS) and ADP have nearly equivalent college- and career-ready expectations in mathematics. The 45 states that have adopted – and whom are now in various stages of implementing the CCSS – have essentially agreed that all students need this level of advanced mathematics to be positioned for success.

As a recent [Washington Post article discussed](#), states have been making steady progress in their efforts to raise not only their high school standards but also

their graduation requirements to the college- and career-ready level. Twenty states and DC require students to complete a college- and career-ready curriculum for high school graduation, including math through (or beyond) Algebra II. These requirements are relatively new and will apply to the Class of 2011 in only eight states (Arkansas, Oklahoma, South Dakota, Texas, Delaware, DC, Indiana and Michigan). (Read [Closing the Expectations Gap, 2011](#) for more information.) As states revise their standards – especially for the 40-plus states that have recently adopted the CCSS – aligning high school graduation requirements is a must.

While the debate will likely continue over whether there is a causal or correlative relationship between advanced mathematics and future success, there is no debating that this level of math (or more) is the what students in high-performing countries learn. There is also no debate that advanced mathematics teaches students to problem solve and think critically. Finally, and perhaps most importantly, there shouldn't be a debate over the fact that if we want to be able to compete and lead in the global economy, we must ensure that our students have the knowledge and skills of their global peers – and that we must not limit future generations by the uniquely American false perception that only some students are good at math. That thinking limits students' options – and our nation's ability to lead.

For more information on why all students should take advanced mathematics, see Achieve's [Math Works](#).

New from Achieve

NAEP Transcript Study: What's in a Name?

In a related story on high school mathematics, a recent study from the National Center for Education Statistics (NCES) found that more students are taking advanced mathematics than ever before. In [America's High School Graduates, the 2009 National Assessment of Educational Progress \(NAEP\) High School Transcript Study](#), NCES analyzed transcripts from a representative sample of 37,700 public and private high school graduates nationwide and found that more high school graduates have taken more rigorous courses than in previous years. Specifically in mathematics, 76% of graduates took Algebra II in 2009, a significant increase from the 53% in 1990, 67% in 2000, and 70% in 2005.



Despite the increase in course-taking, however, NAEP scores have remained flat over time. One likely reason behind this is that course titles mean very little and

not all "Algebra II" courses are worthy of that title. Courses that are rigorous in name only will not prepare graduates for their next steps; what matters is the content of those courses. That's why it's so important for states and districts implementing the Common Core State Standards, or state college- and career-ready standards, to re-evaluate their high school graduation requirements – and course content – to ensure that ALL students are taking courses aligned to the standards.

Next Generation Science Standards

Achieve has begun the planning process for phase two of the work to develop the *Next Generation Science Standards* while the National Research Council (NRC) continues external review on the [Conceptual Framework for Science Education](#). A fact sheet about the development process is now available online [here](#). Check back frequently for updates.

PARCC

The Partnership for Assessment of Readiness for College and Careers (PARCC) recently announced that New Jersey and Oklahoma have joined the PARCC Governing Board. Both states were already active Participating States, and by becoming Governing Board States, they are assuming more leadership within the 25-state alliance. "State collaboration is a hallmark of the consortium and PARCC will benefit greatly from the addition of New Jersey and Oklahoma to the Governing Board," said Mitchell Chester, Commissioner of Education in Massachusetts and Chair of the PARCC Governing Board. The Partnership's assessment system will measure an ambitious set of K-12 learning goals anchored in the Common Core State Standards (CCSS). Read the [news statement](#).

Laura Slover, Senior Vice President, PARCC, recently appeared on a webinar hosted by the Alliance for Excellent Education and the Center for K-12 Assessment & Performance Management at Educational Testing Service (ETS) to discuss the PARCC design and development process. View a recording of the webinar online [here](#).

State Farm's 26 Seconds Campaign

Every 26 seconds in America, a student drops out of high school. State Farm recently announced the launch of a campaign to address this startling statistic and engage those who can most directly change it – the young people themselves.

In an [interview](#) published in *Forbes*, Ed

News Clips

1. U.S. Schools Need to Get 'Better Faster'

In an address at Princeton University, U.S. Secretary of Education Arne Duncan

Rust, State Farm Chairman and CEO and a member of Achieve's Board of Directors, said that the "[26 Seconds](#)" campaign uses interests like music, sports and video to engage youth. The campaign provides an online venue for youth to express feelings on the issue and creatively share thoughts and talents. In a [video](#) for the campaign, Rust encourages students to make graduation a priority so they can be more than a statistic.

called on legislators, educators and communities to come together to change how the country teaches children and to restore America's prominence around the world in education. [More...](#)

2. **Raising the Value of the Diploma**

The *Honolulu Star-Advertiser* notes, "The expectations of the 21st century workforce are higher than ever. The public school system...obviously has some broken gears. Job No. 1 for the new school board should be to repair them, and authorizing stricter diploma requirements is a good first step." [More...](#)

3. **Districts Pilot Common Core State Standards**

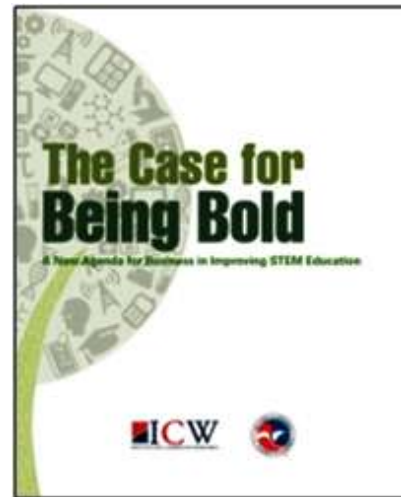
Tampa Bay Online reports that fifteen school districts across the U.S. are participating in a pilot program to implement the Common Core State Standards, a process that will involve training educators and creating tests. [More...](#)

New Resources

- [STEM Vital Signs](#), a new report published by [Change the Equation](#), a consortium of CEOs, points out the wide variance across states of what is considered "proficient." The report highlights results from the National Assessment of Educational Progress (NAEP) and shows that only 38% of 4th graders and a third of 8th graders are proficient or advanced in mathematics. The report adds that states must strengthen instructional supports to ensure students clear a higher bar. Craig Barrett, former CEO

of Intel, Co-Chair of Achieve's Board of Directors, and current chair of Change the Equation, said, "Students in every state deserve the opportunity of a STEM education on par with the best in the world. America's standing as the most innovative and prosperous nation on earth depends on our ability to boost student performance." (Watch a [webcast](#) of the release of the Vital Signs report.)

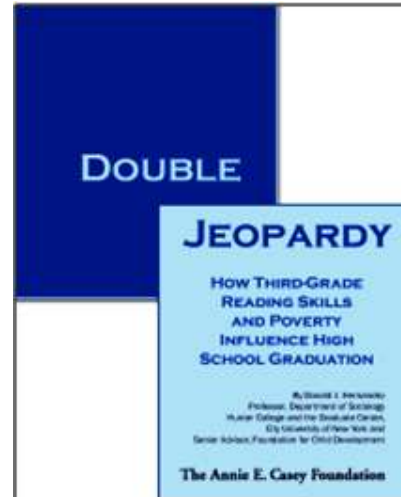
- The Institute for a Competitive Workforce, a group affiliated with the U.S. Chamber of Commerce, published [The Case for Being Bold: A New Agenda for Business in Improving STEM Education](#). Underscoring NAEP results for science, the report notes that only 34% of 4th graders, 30% of 8th graders, and 21% of 12th graders are proficient in science. This comes shortly after the Programme for International Student Assessment (PISA) showed American students continuing to lag behind their international peers. The report uses these results to call business leaders into action to do their part to strengthen STEM education in the U.S., by "push[ing] beyond the familiar talking points and challenge typical routines."



- [Education as a Data-Driven Enterprise: A Primer for Leaders in Business, Philanthropy, and Education](#) – prepared by the Alliance for Excellent Education, Civic Enterprises and the Data Quality Campaign – demonstrates how education is on the road to becoming a data-driven enterprise. The report explains how equipping the appropriate stakeholders with better information can accelerate the country's efforts to boost student achievement and implement the reforms, policies, and practices that strengthen education for all young people.



- A new longitudinal study, [*Double Jeopardy: How Third-Grade Reading Skills and Poverty Influence High School Graduation*](#), published by the Annie E. Casey Foundation finds that students who can't read proficiently by third grade are four times more likely than proficient readers to leave high school without a diploma. The study is the first-ever analysis of high school graduation rates that separates students by their reading test scores (which correspond roughly to the proficiency levels set by NAEP) with additional results for children reading below the proficient level.



Achieve Job Opportunity

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