The Common Core Math Standards – Are They a Step Forward or Backwards

Education Next
By: Ze’ev Wurman and W. Stephen Wilson
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Education Next talks with Ze’ev Wurman and W. Stephen Wilson

More than 40 states have now signed onto the Common Core standards in English language arts and math, which have been both celebrated as a tremendous advance and criticized as misguided and for bearing the heavy thumbprint of the federal government. Assessing the merits of the Common Core math standards are Ze’ev Wurman and W. Stephen Wilson. Wurman, who was a U.S. Department of Education official under George W. Bush, is coauthor with Sandra Stotsky of “Common Core’s Standards Still Don’t Make the Grade” (Pioneer Institute, 2010). Wilson is a professor of mathematics at Johns Hopkins University, served on the National Governors Association-Council of Chief State School Officers “feedback group” for the Common Core standards, and was mathematics author of Stars by which to Navigate? Scanning National and International Education Standards in 2009: An Interim Report on Common Core, NAEP, TIMSS, and PISA.

Education Next: Are the Common Core math standards “fewer, higher, and clearer” than most state standards today? Can you provide some specific examples where you think the Common Core marks a step forward or backward?

Ze’ev Wurman: Common Core standards may in fact be clearer and more demanding than many, though not all, of the state standards they replaced. The Fordham Institute reviewed them last year and found them so. While I have no reason to doubt the technical quality of that review, there is good cause to note what it does not say.

It does not say that Common Core standards are fewer. Indeed, if one compares them to the better state mathematics standards like those of Minnesota or California, they are more numerous. Minnesota’s standards fill 42 pages and California’s 59 pages, while the Common Core takes 73 pages even without the advanced statistics or calculus sections that are included in California’s standards. Counting the standards rather than pages, in grades 1 to 4 California has, on average, a few more standards than Common Core, but in grades 5‒8 the Common Core standards are more numerous than California’s.

Fordham’s review does not unequivocally say the standards are higher, either. They may be higher than some state standards but they are certainly lower than the best of them. For example, the 2008 report of the National Mathematics Advisory Panel, Foundations for Success, called for fluency in addition and subtraction of whole numbers by the end of grade 3, and fluency in multiplication and division by the end of grade 5. This is also what California calls for, along with high achievers like Singapore and Korea. (Japan and Hong Kong finish with multiplication and division of whole numbers even earlier, by grade 4.) Yet the Common Core defers fluency in division to grade 6. Fractions are touted as the Common Core’s greatest strength, yet the Common Core pushes teaching division of fractions to grade 6 without ever expecting students to master working with a mix of fractions and decimals. Students in Singapore, Japan, Korea, and Hong Kong achieve fluency in fractions and decimals in grade
Nor are the Common Core standards necessarily clearer. They may be clearer than many state mathematics standards, but they still tend to be wordy and hard to read. Table 1 compares a few grade 4 California standards with their Common Core counterparts.

Andrew Porter, dean of the University of Pennsylvania’s Graduate School of Education, recently evaluated the Common Core standards with his colleagues, and their conclusion was stark:

Those who hope that the Common Core standards represent greater focus for U.S. education will be disappointed by our answers. Only one of our criteria for measuring focus found that the Common Core standards are more focused than current state standards….Some state standards are much more focused and some much less focused than is the Common Core, and this is true for both subjects.

We also used international benchmarking to judge the quality of the Common Core standards, and the results are surprising both for mathematics and for [ELA]…. High-performing countries’ emphasis on “perform procedures” runs counter to the widespread call in the United States for a greater emphasis on higher-order cognitive demand.

Another recent analysis, by University of Southern California professor Morgan Polikoff, found the Common Core mathematics standards similarly repetitive, and hence as unfocused across elementary grades as the state content standards they attempt to replace, with only somewhat less redundancy in the middle grades.

In summary, analyses of the Common Core standards find them to be mediocre and not obviously better than many sets of state standards.

W. Stephen Wilson: It turns out that nearly everyone was in favor of Common Core standards in mathematics if, and this is a big if, they got to write them. As it turns out, no one got to write the standards. A committee wrote them. Worse, the committee was hired by the very states whose standards would be replaced, so states got first crack at suggesting “corrections” to the standards. The pressures on the writing committee must have been enormous. The only reasonable expectation was that the result would resemble some sort of middle way between the states’ various standards. What is surprising is that the standards don’t rank in terms of quality in the middle 20 percent of state standards, but, instead, fall in the top 20 percent.

There is much to criticize about them, and there are several sets of standards, including those in California, the District of Columbia, Florida, Indiana, and Washington, that are clearly better. Yet Common Core is vastly superior—not just a little bit better, but vastly superior—to the standards in more than 30 states.

Where this gap is most obvious, and most important, is in laying the foundation for college readiness in mathematics early, by grade 6 or 7. Judging by state standards, few people see a connection between elementary school mathematics and college math, let alone really understand how the foundation is built.

Arithmetic is the foundation. Arithmetic has to be a priority, and it has to be done right. A number of things can and do go wrong with state standards for arithmetic in elementary school.

With the introduction of calculators, many states have downplayed the importance of arithmetic, apparently not realizing its true educational value. Instead, they spend time on statistics and probability, both of which Common Core has tossed out of early elementary school. Another thing that states love is geometric slides, turns, and flips, sometimes presented every year in grades K–11, perhaps under the mistaken belief that they are really doing mathematics.

Fewer than 15 states are explicit about the need for students to know the single-digit number facts (think multiplication tables) to the point of instant recall. States love to have kids figure out many ways to add, subtract, multiply, and divide, but often leave off the capstone standard of fluency with the standard algorithms (traditional step-by-step procedures for the addition, subtraction, multiplication, and division of whole numbers). For example, only seven states expect students to know explicitly the standard algorithm for whole number multiplication. Fractions are even harder to find done well. Standards for fractions are generally so vague that nearly everything is left to the reader. Often states expect students to develop their own strategies or a variety of strategies for dealing with fractions. For example, only 15 states mention common denominators. Common Core does a pretty good job with arithmetic, even a very good job with fractions.

EN: Will the Common Core put an end to what has sometimes been termed the “math wars”? In your view, do the math standards resemble those recommended by the National Council of Teachers of Mathematics (NCTM), and what do you make of that similarity (or lack thereof)?

WSW: The end of the math wars! You must be joking.

There will always be people who think that calculators work just fine and there is no need to teach much arithmetic, thus making career decisions for 4th graders that the students should make for themselves in college. Downplaying the development of pencil and paper number sense might work for future shoppers, but doesn’t work for students headed for Science, Technology, Engineering, and Mathematics (STEM) fields.

There will always be the anti-memorization crowd who think that learning the multiplication facts to the point of instant recall is
bad for a student, perhaps believing that it means students can no longer understand them. Of course this permanently slows students down, plus it requires students to think about 3rd-grade mathematics when they are trying to solve a college-level problem.

There will always be the standard algorithm deniers, the first line of defense for those who are anti-standard algorithms being just deny they exist. Some seem to believe it is easier to teach “high-level critical thinking” than it is to teach the standard algorithms with understanding. The standard algorithms for adding, subtracting, multiplying, and dividing whole numbers are the only rich, powerful, beautiful theorems you can teach elementary school kids, and to deny kids these theorems is to leave kids unprepared. Avoiding hard mathematics with young students does not prepare them for hard mathematics when they are older.

There will always be people who believe that you do not understand mathematics if you cannot write a coherent essay about how you solved a problem, thus driving future STEM students away from mathematics at an early age. A fairness doctrine would require English language arts (ELA) students to write essays about the standard algorithms, thus also driving students away from ELA at an early age. The ability to communicate is NOT essential to understanding mathematics.

There will always be people who think that you must be able to solve problems in multiple ways. This is probably similar to thinking that it is important to teach creativity in mathematics in elementary school, as if such a thing were possible. Forget creativity; the truly rare student is the one who can solve straightforward problems in a straightforward way.

There will always be people who think that statistics and probability are more important than arithmetic and algebra, despite the fact that you can’t do statistics and probability without arithmetic and algebra and that you will never see a question about statistics or probability on a college placement exam, thus making statistics and probability irrelevant for college preparation.

There will always be people who think that teaching kids to “think like a mathematician,” whether they have met a mathematician or not, can be done independently of content. At present, it seems that the majority of people in power think the three pages of Mathematical Practices in Common Core, which they sometimes think is the “real” mathematics, are more important than the 75 pages of content standards, which they sometimes refer to as the “rote” mathematics. They are wrong. You learn Mathematical Practices just like the name implies; you practice mathematics with content.

There will always be people who think that teaching kids about geometric slides, flips, and turns is just as important as teaching them arithmetic. It isn’t. Ask any college math teacher.

The end of the math wars! You must be joking.

ZW: Math wars erupted as a result of the unfocused and mostly math-less 1989 NCTM standards. NCTM rewrote those terrible standards in 2000, yet much of what mathematicians found objectionable remained in place. Only in 2005, with the publication in Notices of the AMS [American Mathematical Society] of “Reaching for Common Ground in K–12 Mathematics Education,” did the two sides make a serious attempt to bridge the chasm. NCTM followed shortly with its 2006 Curriculum Focal Points, a document that finally focused on what mathematics is all about: mathematics. Since then, NCTM seems to have regressed, as evidenced by its 2009 publication Focus in High School Mathematics, a document that is full of high-minded prose yet contains little rigor or specificity.

The Common Core mathematics standards are grade-by-grade–specific and hence are more detailed than the NCTM 2000 standards, but they do resemble them in setting their sights lower than our international competitors, by, for example, locking algebra into the high school curriculum.

And they contain inexplicable holes even when compared to the much shorter NCTM Curriculum Focal Points, the major one being the absence of fraction conversion among their multiple representations (simple, decimal, percent). Other puzzling omissions include geometry basics such as derivation of area of general triangles or the concept of pi. One can argue those can be inferred, but the same can be said regarding all those state standards we acknowledge as “bad”—that all those missing pieces “can be inferred.”

What to make of such obvious deficiencies and omissions? Unfortunately, the main authors of the Common Core mathematics standards had minimal prior experience with writing standards, and it shows. While they may have had a long and distinguished list of advisers, they did not seem to have sufficient experience to select the wheat from the chaff. How, otherwise, can one explain their selecting an experimental approach to geometry, teaching it on the basis of rigid motions, that has not been successfully tried anywhere in the world? Simple prudence and an ounce of experience would tell them either to stick to what is known to work or to recommend a trial phase before foisting it sight-unseen on a nation of 300 million.

EN: How do the Common Core math standards compare to those in use in the world’s highest-performing nations? Crucially, on what do you base that assessment?

ZW: It is not difficult to show that the Common Core standards are not on par with those of the highest-performing nations.

Here is what Professor R. James Milgram of Stanford, the only professional mathematician on the Common Core Validation Committee, wrote when he declined to sign off on the Common Core standards:

This is where the problem with these standards is most marked. While the difference between these standards and those of the top states at the end of eighth grade is perhaps somewhat more than one year, the difference is more like two years when
compared to the expectations of the high achieving countries—particularly most of the nations of East Asia.

And here is what a non-American member of the Validation Committee wrote to the Council of Chief State School Officers when declining to validate the standards:

I cannot in all conscience, endorse statements 2 and 3 ([2] Appropriate in terms of their level of clarity and specificity; [3] Comparable to the expectations of other leading nations] The standards are, in my view, much more detailed, and, as Jim Milgram has pointed out, are in important respects less demanding, than the standards of the leading nations.

We also have it straight from the horse’s mouth, so to speak. Professor William McCallum, one of the three main writers of the Common Core mathematics standards, speaking at the annual conference of mathematics societies in 2010, said,

While acknowledging the concerns about front-loading demands in early grades, [McCallum] said that the overall standards would not be too high, certainly not in comparison [with] other nations, including East Asia, where math education excels.

Jonathan Goodman, a professor of mathematics at the Courant Institute at New York University, found exactly that: “The proposed Common Core standard is similar in earlier grades but has significantly lower expectations with respect to algebra and geometry than the published standards of other countries.”

It is also worth mentioning that the standards, in addition to being “[c]omparable to the expectations of other leading nations,” were also supposed to be “[r]eflective of the core knowledge and skills in ELA and mathematics that students need to be college- and career-ready.” That is, at least, what the other Common Core Validation Committee members certified when they signed off on the standards in 2010.

College readiness is defined by what colleges require as prerequisites from their incoming freshmen. The enrollment requirements of four-year state colleges overwhelmingly consist of at least three years of high school mathematics including algebra 1, algebra 2, and geometry, or beyond. Yet Common Core’s “college readiness” definition omits content typically considered part of algebra 2 (and geometry), such as complex numbers, vectors, trigonometry, polynomial identities, the Binomial Theorem, logarithms, logarithmic and exponential functions, composite and inverse functions, matrices, ellipses and hyperbolae, and a few more.

What should we make, then, of a recent study purporting to “validate” that Common Core standards indeed reflect college readiness? The study, led by David Conley, was published more than a year after Common Core standards were already certified as college-ready by...David Conley as a member of the Common Core Validation Committee. Paraphrasing Shakespeare, he doth attest too much.

In summary, the Common Core mathematics standards fail on clarity and rigor compared to better state standards and to those of high-achieving countries. They do not expect algebra to be taught in grade 8 and instead defer it to high school, reversing the most significant change in mathematics education in America in the last decade, supported by the 2008 recommendations of the National Mathematics Advisory Panel, and contrary to the practice of our international competitors. Moreover, their promise of college readiness rings hollow. Its college-readiness standards are below the admission requirement of most four-year state colleges.

WSW: When you are so far behind, comparing the United States with better-performing countries through the incredibly narrow lens of standards doesn’t make a lot of sense. I think Common Core is in the same ball park, certainly not up there with the best of countries, but Common Core isn’t up there with the best state standards either, and what does that mean? Look at California’s standards for example. They are great standards and have been unchanged for over a decade, but many in math education hate them. They think they are all about rote mathematics, but I think such people have little understanding of mathematics.

So, let’s just pretend for a moment that Common Core is just as good as the very best. Who, in education circles, will agree with that enough to put it all in practice? The standard algorithm deniers will teach multiple ways to multiply numbers and mention the standard algorithm one day in passing. Korea will say “no calculators” in K–12, a little extreme perhaps, but some in the U.S. will say “appropriate tools” means calculators in 4th grade. We, in this country, are still not on the same page about what content is most important, even if everyone says they’ll take Common Core. Without a unified, concerted effort to teach real mathematics, there isn’t much chance of catching up.

In other countries, if you say “learn to multiply whole numbers,” no one questions how this should be done; students should learn and understand the standard algorithm. In the U.S., even if you say “learn to multiply whole numbers with the standard algorithm,” some people will declare wiggle room and try to avoid the standard algorithm.

There is one big hope for our international competitiveness. Other countries see that their best STEM students come to the U.S. for graduate school—more than half of our STEM graduate students are foreign—and to start high-tech companies. Instead of thinking that this is possible because of their strong K–12 mathematics education, they erroneously conclude that they should adopt our version of K–12 mathematics education. We just might catch up with these countries without any effort on our part.

EN: What, then, are your main areas of disagreement?

WSW: Ze’ev refers to Andrew Porter’s work to support his argument that Common Core lacks focus. In the corrected version of
Porter's paper, he says that 39.55 percent of grades 3‒6 coarse-grained topics for the states are on Number Sense and Operations, but Common Core gets 55.47 percent. To me, that says that Common Core focuses on arithmetic in grades where arithmetic should be the focus, and that the states did not focus on arithmetic.

My only serious disagreement with Ze'ev is his summary that “analyses of Common Core standards find them to be mediocre and not obviously better than many sets of state standards.” If Common Core is mediocre, then mediocre is being set at a high standard. There are many states that set a very different, and much lower, standard for mediocre.

ZW: Steve sees the benefit of having Common Core standards that are better than those of “more than 30 states,” while I see the disadvantage of confining the whole nation to mediocre standards that are worse than those of highly rated states and high-achieving countries.

Taking this a step further, I believe the Common Core marks the cessation of educational standards improvement in the United States. No state has any reason left to aspire for first-rate standards, as all states will be judged by the same mediocre national benchmark enforced by the federal government. Moreover, there are organizations that have reasons to work for lower and less-demanding standards, specifically teachers unions and professional teacher organizations. While they may not admit it, they have a vested interest in lowering the accountability bar for their members. With Common Core, they have a single target to aim for, rather than 50 distributed ones. So give it some time and, as sunset follows sunrise, we will see even those mediocre standards being made less demanding. This will be done in the name of “critical thinking” and “21st-century” skills, and in faraway Washington D.C., well beyond the reach of parents and most states and employers.

Federal Role in K-12 at Heart of ESEA Hearing

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By Alyson Klein
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Anyone following the reauthorization of the Elementary and Secondary Education Act would be able to guess at the big question hanging over a hearing on the House GOP bills to rewrite the law: What's the right role for the federal government in helping to improve K-12 education?

The legislation, introduced last week by Rep. John Kline, R-Minn., the chairman of the House Education and the Workforce Committee, would squelch the federal role in education policy, leaving almost all major accountability decisions to states.

"Instead of a one-size fits-all federal accountability system, our bill directs each state to develop its own system that takes into account the unique needs of students and communities," Kline said during today's hearing. "We've been trying to achieve the balance."

But the proposals' lack of performance targets, particularly for special subgroups of students, such as English-language Learners, has prompted an angry response from civil rights groups and business leaders—and Rep. George Miller, D-Calif., the top Democrat on the committee. He said No Child Left Behind, the current version of ESEA, "turned the lights on" when it comes to student achievement, particularly for subgroups of students who had long been ignored.

In testifying before the panel, Delia Pompa, the senior vice president of programs at the National Council of La Raza, echoed those arguments.

"I think the notion of high expectations is missing from this legislation," she said. "If we do not set these expectations, we've seen a lot of evidence that all children don't get the same treatment and aren't held to the same standards. ... We've seen too many years where performance for these children was shoved under the rug."

Kline asked Tom Luna, Idaho's superintendent of public instruction and the president of the Council of Chief State School Officers, what he thought of the argument that the proposal would take away states' impetus for reform. Can states move the needle on accountability without the feds making them?

"States have demonstrated that, without being compelled by the federal government they've adopted higher academic standards than they have in the past," Luna said, referring to the Common Core State Standards Initiative, an effort among 46 states to craft uniform, rigorous standards. "Without any compulsion from the federal government there's a renaissance going on around the country in education reform."

(Politics K-12 question: No compulsion from the federal government? What about those extra points states got in Race to the Top for adopting uniform, rigorous standards? Does that count as being compelled by the feds, or no? Comments section is open.)

The committee also heard from Felicia Kazmier, an art teacher from Otero Elementary School in Colorado's Harrison School
District Two, which is considered a national pioneer in using student achievement to inform evaluation systems. Kline’s bill includes a provision that would require districts to create those systems—it’s something he has a strong personal belief in, he has said.

Kazmier said she thought she was a good teacher before she went to work for the district. But the evaluation system has taken her practice to a whole new level, she said.

"As a good teacher, what do you have to fear" from an evaluation system, she asked.

But not everyone buys the argument that putting evaluations in the law is a good idea. In fact, it’s led to some funky politics. Over on the Senate side, Republicans successfully got evaluation language stripped out of that chamber’s version of the bill. But Kline is personally committed to putting requirements for evaluation in the law, a goal the Obama administration shares.

Another key question facing lawmakers: Should there be a role for the federal government when it comes to school improvement? Kline’s legislation would zero out the School Improvement Grant program, which has been criticized for being too prescriptive.

That’s not the right way to go, argued one of the witnesses, Robert Balfanz, the co-director of the Everyone Graduates Center at the School of Education at Johns Hopkins University.

Some progress is beginning to happen in turning around the nation’s lowest-performing schools, thanks in part to the SIG program, although it has its flaws, Balfanz said.

The legislation "takes the foot off the gas," when it comes to school improvement, he said.

Kline said he would like the committee to consider the legislation in the next couple of weeks. But it doesn’t seem likely that many Democrats, at least on the committee, will support it. And, because Congress has been so dysfunctional and partisan lately, almost no one expects reauthorization to actually happen this year.

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Can Khan Move the Bell Curve to the Right?

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By: June Kronholz
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Math instruction goes viral

It was goal-setting day in Rich Julian’s 5th-grade class at Covington Elementary School in Los Altos, California, when I visited last fall, and Julian was asking each of his 29 students to list three math goals for the week.

To become proficient at dividing a one-place number into a three-place number, a girl with blue-painted fingernails wrote in her math journal.

To become proficient in multiplying decimals, wrote a dark-haired boy. To become proficient at subtracting one four-place number from another. To become proficient in arithmetic word problems. To complete an exercise in the properties of numbers, like (4 + 9) + 5 = ? + (9 + 5).

No two youngsters seemed to have quite the same math goals because, of course, no two youngsters are quite alike when it comes to learning. That’s why Los Altos is betting the future on an online math program from Khan Academy, and why scores of other schools and districts are clamoring to include Khan Academy in their math curriculum.

For the next 45 minutes, Julian met individually with his 5th graders to refine their goals. (In November, Julian left Los Altos to become assistant principal in the Milpitas Unified School District.) Everyone else logged onto the free Khan Academy web site and called up the “module,” or math concept, that fit their goals. Some watched short video lectures embedded in the module; others worked their way through sets of practice problems. I noticed that one youngster had completed 23 modules five weeks into the school year, one had finished 30, and another was working on his 45th.

As youngsters completed one lesson, an online “knowledge map” helped them plot their next step: finish the module on adding decimals, for example, and the map suggests moving next to place values, or to rounding whole numbers, or to any of four other options.

Julian, meanwhile, tracked everyone’s progress on a computer dashboard that offers him mounds of data and alerts him when someone needs his attention. He showed me, for example, the data for a child who had been working that day on multiplying decimals. The child had watched the Khan video before answering the 1st practice problem correctly, needed a “hint” from the program on the 3rd question, got the 7th wrong after struggling with it for 350 seconds—the problem was 69.0 x 0.524—and got the 18th correct in under a minute.
But just as powerful are the data kids have on themselves. The Covington youngsters regularly pulled up an array of charts that showed them which math concepts they had mastered and which they were working on, needed to review, or were stumbling over.

The classroom buzzed with activity, and amazingly, all the buzz was about math.

Khan’s Rise

By now, more than 1 million people have watched the online video in which Salman Khan—a charming MIT math whiz, Harvard Business School graduate, and former Boston hedge-fund analyst—explains how he began tutoring his New Orleans cousins in math by posting short lessons for them on YouTube. Other people began watching the lessons and sending Khan adulatory notes (“First time I smiled doing a derivative,” wrote one) or thanking him for explaining fractions to an autistic son.

Khan quit the hedge fund, moved to Silicon Valley, and in 2009, with funding from a constellation of technology stars (Bill Gates’s children were using the videos), launched the nonprofit Khan Academy. A year later, Mark Goines, a member of the Los Altos school board and a legendary Silicon Valley investor, introduced Khan to the district’s new superintendent. Los Altos already ranked among the best-performing districts in the state, but it had set itself a goal of improving individual achievement, and “capturing data at a granular level” on each student was proving difficult, Goines told me.

A few weeks later, in November 2010, Los Altos agreed to pilot Khan Academy with two classes of 5th graders and two classes of 7th graders and provide Khan with feedback to refine the web site and tools. By summer 2011, some 250 school districts, charter schools, and independent schools were asking to be part of the pilot—Khan chose only a dozen—and have Khan staff work with them to integrate the videos, data dashboard, and other tools into their curriculum.

Salman Khan’s short videos remain the centerpiece of Khan Academy (there already are 2,576 of them and counting). In each one, Khan’s voice describes a discrete math concept, such as solving a quadratic by factoring or interpreting inequalities, while only his hand-scribbled formulas appear on-screen. Khan’s idea was that youngsters would watch the videos at home and work on problems in class, essentially “flipping” the classroom (see “The Flipped Classroom,” What Next, Winter 2012). But teachers told me that youngsters also are using the videos as a just-in-time solution when they’re stumped on a problem in class, or to move ahead when they feel ready.

The data that the web site churns out and the site’s gaming features seem to be the real learning motivators. Youngsters become “proficient” in a concept by answering a “streak” of 10 consecutive computer-generated questions: miss one and the computer sends you back to the start. Youngsters earn “energy points” for correct answers, and badges for accomplishments as diverse as working speedily (that’s a meteorite badge) or becoming proficient in the Pythagorean theorem (that’s a moon badge).

Ted Mitchell, president of the NewSchools Venture Fund and a Khan Academy board member, told me that Khan developers “were blown away by how important” the games and badges seem to be in giving kids a sense of accomplishment and progress. Even older kids, for whom badges are ho-hum, “are instantly motivated” when they complete a streak, and the program acknowledges their accomplishment, says Brian Greenberg, who until recently was chief academic officer of Envision Schools. “What’s brilliant about Khan Academy is the instant feedback,” Greenberg told me.

Envision runs four charters in Northern California, including one that piloted Khan Academy with a small program for remedial-algebra students last summer.

Los Altos has extended the Khan Academy program to all of its 5th and 6th grade classes, and to its 7th graders who were achieving at grade level and below.

The Teaching Curve

From Covington Elementary, I dropped in on Courtney Cadwell’s 7th-grade pre-algebra class at Egan Junior High. She, like Julian, piloted Khan Academy last year. Based on that first-year success, Los Altos extended the program to all of its 5th- and 6th-grade classes, and to its 7th graders who were achieving at grade level and below.

Cadwell, a 17-year teacher who was wearing University of Texas orange for her alma mater, calls Khan just “one resource we use.” The previous night, she had assigned worksheet homework; she began the class with a textbook lesson. Math projects ringed the classroom, a reminder that Khan Academy doesn’t include project-based lessons. That night’s homework included a reading on the origin of zero: Cadwell, among others I spoke with, said Khan’s weakness is that it “is not great at helping kids conceptualize math.”

Khan’s strength became clear a few minutes later when the students opened their laptops. Cadwell strolled the room with an iPad in hand, tracking the youngsters as they moved through problems and modules, and intervening with a quick one-on-one when the data identified a student who was stumped. “I’m getting data in real time about each student instead of assuming the entire class needs intervention,” she explained afterward. Khan “lets me use my class time more wisely.”

It also means that teachers have to figure out new ways to work. “Teachers have to be willing to escape from the role of standing in front of the class” and flexible enough to group kids based on need, said Julian, who was a math coach in New York for 20 years and retains his big-city bustle.
As I watched Julian, Cadwell, and later Ruth Negash at Oakland’s Envision Academy of Arts and Technology, they seemed to be always on the move—meeting individually with children, tutoring small groups, and occasionally addressing the whole class. “I actually work harder” with Khan Academy, Julian said. “I’m up and around more, meeting with kids more.” That gives time back to students and, as Cadwell said, makes them “take ownership of their learning” by setting their own goals.

It also means a new level of classroom collaboration: youngsters can look at each other’s data and identify “coaches” among their classmates. Julian urged his 5th graders to ask the Khan program for a hint, watch a video, or ask a coach for help before coming to him. “Show him how to do it, don’t walk around the class giving answers,” he admonished would-be coaches. Pretty soon, a girl in a pink T-shirt turned to a girl in purple for coaching, and the two worked meticulously at solving 1.94 x 5.52.

Making It Work in Oakland

Los Altos is an affluent, tech-savvy community; I next wanted to see how Khan Academy could work in an inner-city classroom. So two days later, I visited Envision Academy, a downtown Oakland charter school, and Ruth Negash, an intense 4th-year teacher with wild, curly hair and two education degrees from San Francisco State University.

In 2011, Negash taught two summer-school classes of 9th, 10th, and 11th graders who had failed Algebra I. One randomly assigned class used Khan Academy; the other was a traditional math class. The results were promising enough that Negash now is using Khan in all of her 9th-grade algebra classes.

On the day I visited, Negash started both of her classes with a minilecture on linear equations, and then had her students solve for x in 7x + 4 = 18. The classes quickly became fidgety, first as Negash explained the problem, and then as youngsters finished at different speeds. Negash had to urge them to “respect the community of learning.”

But that changed a few minutes later when the youngsters opened their computers—I had noticed the same change in Cadwell’s class—and worked on Khan Academy for the next 75 minutes. I heard an occasional groan of exasperation. “They threw a trick question at me and sent me back to the beginning,” one boy moaned when his streak was broken. But the energy now was directed toward everyone’s screen.

Although everyone in Negash’s classes had taken, and presumably passed, algebra in 8th grade, their math competence ranged from marginal to impressive. In both periods, three or four youngsters claimed a table in the hallway, where they worked silently at lessons on quadrilaterals and complementary and supplementary angles, typical geometry exercises. But other students struggled with addition and subtraction, and one quarter don’t know their multiplication tables, Negash told me. (To keep those youngsters from falling even further behind, she gives them a reference sheet with the multiplication tables on it.) Negash told both classes to work on the Khan module on solving for a variable—a continuation of her minilecture—but Khan’s online prompts were urging most youngsters to first review lessons on lower-level skills.

Some of these youngsters simply “feel safer” doing arithmetic and will move on when they’ve experienced some math “success,” Negash predicted. Other educators had similar takes: Khan “takes away a lot of the fear about math” by letting kids backfill their gaps and then move ahead at their own pace, said Sandra McGonagle, the principal of Santa Rita Elementary in Los Altos, which also is using Khan Academy in its 5th and 6th grades.

“You don’t have to worry about getting something wrong in front of the whole class,” one of Julian’s 5th graders, the girl with blue nail polish, told me.

But in Negash’s classes, the wide range of math abilities is clearly a challenge. Negash sat with one low-performing student for much of the first-period class and with three others in the second period, hoping to encourage some of that “success.” Meanwhile, other students were calling for her help. Two boys were stumped by “adjacent” in a word problem; language issues crop up “every day,” Negash said.

When Negash finally had a moment to consult her Khan dashboard at the end of second-period class, she saw that one youngster had spent 62 minutes solidly working on math, but another had spent only 14 minutes. “It’s hard to figure out a different plan for 25 kids every day,” she sighed.

Gia Truong, superintendent of Envision Schools, said Khan Academy developers had urged her to let Negash’s students “start where they were” in math and move forward. But that’s creating a conflict when some kids are so far behind, she told me: “If you do that, you might never get to the algebra standards” that California students must pass in order to graduate.

“You’re in the new paradigm, but the grading standards are in the old paradigm,” she added.

Getting to Results

Test results at both Los Altos and Envision—the only two pilots to have any results so far—suggest that Khan Academy is working. Los Altos says that among the 7th graders who used the program in 2010–11—all remedial students—41 percent scored “proficient” or “advanced” on the California Standards Test compared to 23 percent the year before. Among 5th graders, 96 percent using Khan were proficient or advanced compared to 91 percent in the rest of the district.

At Envision’s summer-school program, the youngsters in the Khan Academy class spent only half their time on algebra—the rest of their time was on lower-level math skills—and yet still slightly outscored the traditional class, which spent all of its time...
on algebra.

Both districts are quick to say that it’s far too early to claim success: there were only 115 youngsters in the Los Altos pilot and just 20 at Envision. “It’s enough to say this is promising; it’s not enough to say this is the future,” former Envision Schools officer Brian Greenberg said.

Most observers of the Khan experiment agree that the measure of success must be student achievement. Otherwise, “I’m not very sympathetic,” said Michael Horn of Innosight Institute. As teaching is increasingly differentiated, however, schools may need a different kind of assessment. California’s year-end test can tell which 5th graders meet the state’s math standards; it can’t tell if some of those 5th graders have progressed to trigonometry or pre-calculus, as two Los Altos kids did last year.

But several experts also suggested measuring Khan’s impact by also looking at changes in the distribution of test scores. Khan Academy isn’t likely to close the learning gap because some kids, freed from the teach-to-the-middle plod of the usual classroom, gallop ahead. But Khan would be a success if low-performing kids move ahead too and “shift the bell curve to the right,” said the NewSchool Venture Fund’s Ted Mitchell.

Some other Khan watchers gave a surprisingly strong endorsement to such measures as student engagement and self-confidence, and to soft skills like goal setting and teamwork. “I don’t look at it as just based on the data,” said Mark Goines, the Los Altos school board member whose high-tech background (he helped develop and run TurboTax for Intuit, Inc.) suggests a fine reading of the data. “The kids seem to be happy about learning. That makes me excited,” he said.

What about increasing class size, I asked: Should Khan’s success be measured in part on its ability to increase teacher productivity? In elementary schools, where students generally spend the day with one teacher, increasing class size because of Khan would mean bigger classes in every other subject, too. And Goines, who said he has viewed “hundreds” of online programs, cautioned that there aren’t any comparable products in other subjects, especially in writing.

A fear among advocates of online learning is that slow learners will be abandoned in front of a computer, and a large classroom increases those chances. “It would then become a babysitting tool,” said McGonagle, Santa Rita’s principal.

Blending Khan

Finally, I asked for “takeaways” from the Khan Academy experience. Greenberg told me that it’s more important that teachers be “nimble” and “entrepreneurial” than that they be tech wizards. All three teachers said they felt comfortable with technology, but that, more importantly, they were risk-takers. Even before she began piloting Khan Academy, Cadwell asked her PTA to buy classroom laptops for the youngsters in her remedial math class. “I figured if I could get them onto some practice sites, I’d figure things out from there,” she said.

Santa Rita’s McGonagle said it was “crucial” to have pilot teachers like Cadwell who can act as avatars for the rest of the district as it expands its blended learning. Cadwell is mentoring other Los Altos teachers this year. They “don’t need training as much as they need time” with the program, she told me (the data are fairly easy to use, but she and Julian asked Khan’s engineers for so much of it that both say they don’t always use it all).

That training shouldn’t end with just learning to manipulate the data, though. It also means learning how teachers can use their time differently, how to work with youngsters who have different abilities, and how to blend Khan into the curriculum, not substitute for it, everyone told me. Cadwell and Negash said that they find gaps in the Khan curriculum, and that it isn’t completely aligned with either California or core-curriculum standards, although Khan is adding lessons to fill the holes.

“You can’t just put a kid down in front of a computer,” Goines said, although the kids I saw in Julian’s, Cadwell’s, and Negash’s classes sure seemed to enjoy it.

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STATE NEWS

New York: A Last-Minute Deal on Teacher Evaluations

New York Times
By: Fernanda Santos and Winnie Hu
February 16, 2012
http://www.nytimes.com/schoolbook/2012/02/16/as-deadline-nears-a-compromise-on-teacher-evaluations/?ref=education

New York State education officials and the state teachers’ union reached an agreement on Thursday on a new evaluation system, just hours before a deadline set by Gov. Andrew M. Cuomo, who had threatened to impose his own way to measure the quality of teachers’ work.
The agreement, which also applies to principals, puts the state one step closer to safeguarding $700 million in federal education aid. By pushing the two sides toward a compromise, Mr. Cuomo ended a nearly two-year stalemate and stole the spotlight from Mayor Michael R. Bloomberg, who for a decade has focused much of his attention on education.

The governor also broke a down-to-the-wire impasse between New York City’s teachers and its Education Department over how teachers classified as ineffective could appeal that rating — an issue the mayor had been working for months. The agreement, announced at a news conference in Albany, allows school districts to base up to 40 percent of a teacher’s annual review on student performance on state standardized tests.

Half of that portion must be based on students’ test score growth from one year to the next.

For the other half, the agreement offers the roughly 700 school districts in the state some latitude. They could use test data to measure student achievement in some other way — say, the progress of specific groups of students, like those who are not proficient in English or have special needs. They also could devise their own tests, or use tests developed by a third party, provided that the tests were approved by the state.

The remaining 60 percent of a teacher’s rating is to come from subjective measurements, primarily classroom observations by principals.

“It’s a victory for all New Yorkers,” Mr. Cuomo said. “Government works, and that makes this state a better state.”

The resolution came after all-night negotiating sessions in Albany and New York City, and it included concessions from all sides.

The negotiators reached a handshake agreement at 5:30 a.m. Mr. Bloomberg said he was asleep at the time; he had been under the weather. Mr. Cuomo ironed out the final details through e-mails and phone calls with his negotiators, people involved in the talks said.

He used his broad powers under the state’s budget process to push for the compromise. A month ago, the governor warned the sides to reach a deal by midnight on Thursday — the last day he could submit his amendments to the budget — or he would impose his own evaluation system. And on Thursday, Mr. Cuomo emerged as the clear winner.

For the first time, all school districts will have to abide by the same tight guidelines to assess teachers and principals, using a scoring system intended to take into account their performance and student achievement.

The announcement brought together the state’s education commissioner, John B. King Jr., and the president of the state’s teachers’ union, Richard C. Iannuzzi, who had been wrangling over the parameters of the statewide system since shortly after it was written into law in 2010 as part of the state’s application for a federal Race to the Top grant.

Michael Mulgrew, the president of the New York City teachers’ union, was also there, but Mr. Bloomberg was not. At one point, while the governor’s staff was posting Twitter messages about the agreement, Mr. Bloomberg posted Twitter messages about the inauguration of the city’s Facebook page.

The mayor addressed the agreement later, however, before a bill-signing ceremony at City Hall. He said it resolved “the lion’s share of issues” between the city and its teachers’ union.

“Historic,” Mr. Bloomberg said, “is probably not too strong a word to use.”

New York is one of 19 states that received grants under the Race to the Top competition, which requires every recipient to adopt a teacher evaluation system. In January, the federal Education Department warned New York that it could lose its share of the money if it did not comply.

On Thursday, Education Secretary Arne Duncan said in New York City that the agreement resolved “a major roadblock,” but he did not rule out the possibility that the state could lose its funds over other issues.

The mood at the Albany news conference was festive, but elsewhere there were critics of the agreement.

Arnold Dodge, an assistant professor of educational leadership at Long Island University, said it was a “political deal” that would reduce the complexities of teaching to a simple number. “It’s not fair, it’s not reliable, and it’s not stable,” he said, adding, “You’re going to get a superficial number that has virtually no meaning for the long term.”

At the news conference, everyone made a point of thanking Mr. Cuomo. Mr. Mulgrew did so while slighting the mayor, saying the agreement on the appeals process became possible only after Mr. Cuomo intervened. “The governor came in, he assisted us, and we now have a fair appeals process,” Mr. Mulgrew said.

The city agreed to use an independent panel to hear appeals from teachers seeking to dispute a rating of “ineffective” on a four-point scale for reasons other than their job performance. That recourse, however, is available only to 13 percent of the teachers receiving such a rating for the first time.
Under the new system, teachers are ranked ineffective, developing, effective or highly effective. The current system has only two rankings, unsatisfactory or satisfactory.

Teachers who receive an “ineffective” rating are to be given a development plan to address weaknesses. Principals, as well as outside observers, will monitor them. In cases in which the observers back the principals’ findings, the city would move to fire the teacher with a presumption of incompetence and an expedited procedure. Currently, the city has the burden of proof, making dismissal much more difficult.

The appeals had been the most significant impediment to a compromise over an evaluation system for New York City teachers, but there is another hurdle: the fate of 33 struggling schools the city wants to close and reopen under an arrangement that would allow it to dismiss half of their teachers.

It is a plan created to restore $58 million in federal funds the schools had been receiving — but a plan Mr. Mulgrew opposes. If Mr. Bloomberg pursues the plan, Mr. Mulgrew said, it will be “very difficult” to put an evaluation system in place in the city.

Mr. Cuomo gave school districts across the state until January to sign off on their version of the evaluation system, or else lose their 4 percent increase in education aid. State union officials said nearly 100 districts had already reached agreements with their local unions and another 250 had agreed on key parts.

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Board OKs changes to Idaho online learning rule

Associated Press
By: Staff
February 16, 2012
http://www.edweek.org/dd/articles/2012/02/16/499132idonlineeducation_ap.html
BOISE, Idaho (AP) — The state Board of Education is approving changes to a rule requiring high school students to take online courses to graduate.

The rule hit a snag in the 2012 Idaho Legislature, where education groups protested a requirement that one of the two required online credits be taken in the form of an asynchronous course. That's a class where students move at their own pace and interact with their online teacher as needed.

With a synchronous course, students and their instructors are online together at a scheduled time.

The Idaho School Boards Association was among stakeholders who urged lawmakers to leave the delivery of the online courses up to local school districts. The state Board of Education approved a new rule Thursday that removes the asynchronous requirement.

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Opinion: Flunking grade in science won't work for Oklahoma

The Oklahoman
By: Editorial Board
February 17, 2012
http://newsok.com/flunking-grade-in-science-wont-work-for-oklahoma/article/3649565/?page=1

Oklahoma is accustomed to getting low grades for many of its K-12 curriculum standards. A flunking grade in a science education survey fortunately has gotten the attention of a state education official.

Oklahoma was one of 10 states given an F in a survey from the Thomas B. Fordham Institute, a Washington, D.C., think tank, while 17 states got a D and 11 states got a C.

“The Oklahoma science standards are simply not OK,” wrote the report's authors. “Woefully little science content appears, and what is present is often flat-out wrong, oddly worded, or not up to grade level.”

Several neighboring states got much better grades than Oklahoma; Arkansas and Kansas received Bs and Missouri, New Mexico and Texas got Cs.

In the review, the institute found science education standards in most states are “mediocre to awful, placing America’s national competitiveness, technological prowess and scientific leadership in grave jeopardy.”

Jeff Downs, director of science, technology, engineering and math for the state Education Department, said the report has further fueled the agency's drive to improve science standards in Oklahoma.

“If someone like this respectable institute is saying that we have some weaknesses, then we need to address them,” Downs said. “So I am looking at this more as an opportunity. If there are holes in our standards, we need to take a course of action to correct that.”

The agency is conducting a search for a science director for the Office of Instructional Services, whose top priority will be to
organize a committee of kindergarten through 12th-grade stakeholders and experts who will investigate each criticism laid out in the report.

We're counting on this committee to rewrite the science standards to get them up to par nationally. An F is not permissible in a state that says it values education reform.

**Bill proposes Mississippi charter school overhaul**

Associated Press  
By: Jeff Amy  
February 16, 2012  

JACKSON, Miss. - A new bill in the Mississippi Senate would let students cross district lines to attend charter schools.

The bill, which was discussed Thursday in the Senate Education Committee, would send local tax money along with the student to any charter school, even if the charter school is in another public school district.

Senate Education Committee Chairman Gray Tollison, R-Oxford, said his Senate Bill 2401 would set the stage for innovative approaches to improve Mississippi's schools.

"This is not the silver bullet," he told the committee. "This is a tool, an option we do not have."

A new seven-member commission would approve applications and oversee operations of the schools, meant to achieve better academic performance in exchange for freedom from regulation. Two members apiece would be appointed by the governor, lieutenant governor and state superintendent of education, while one member would be appointed by the state higher education commissioner.

Many advocates had proposed allowing the Mississippi Department of Education to license and regulate charter schools, but national advocates encouraged Tollison to set up the independent commission. He said that traditional education leaders aren't well equipped to allow the flexibility that a good charter school needs.

"It is a public school, but it needs to have a real and perceived separation from the traditional public school system," Tollison said.

After approval, a charter school would get a five-year term. During that time, it would have to test its students in the same way that traditional schools do, although a charter school could propose additional performance measures as part of the contract it negotiates with the board.

"Generally speaking, they'll have to meet all the standard accountability measures that the public schools do," Tollison said.

Charter schools would be governed by their own boards, and could open in any district that's below the two highest notches on the state's rating system — "star" and "high performing." In those 32 districts, a local board would have to approve any application. But even students in highly-rated districts could attend charter schools elsewhere.

Critics question whether the state should allow charter schools as widely as Tollison proposes. Nancy Loome, head of the Parents' Campaign, says that with scarce money, Mississippi needs to limit charter schools to areas where schools are chronically failing.

"These charter schools are desperately needed in districts where kids do not have good options," Loome said. "We need to focus these resources in areas where kids are not getting a good public education."

Sen. David Blount, D-Jackson, said he was considering offering an amendment that would allow the state's 50 "successful" districts to also opt out of charter schools, and to keep charter schools from enrolling students in districts that opted out. The committee plans to consider amendments Tuesday.

State and local tax money would follow a student to a charter school, even when they cross district lines. A tax collector would be required to send a per-capita share of all revenue collected from a student's traditional district, even amounts that local districts raise above the requirements for the local funding formula.

Forest Thigpen, head of the Mississippi Center for Public Policy, said he was pleased that local funding would follow the student. He favors an even more permissive location policy. "We think that charter schools should be able to locate anywhere," Thigpen said.

Sen. David Jordan, D-Greenwood, said he was concerned that the state wants charter boards to take over all its public schools. Tollison, though, said he anticipates a relatively small number, and that the board would factor in whether a local community supports an application.
Charter school teachers would not be paid according to the state salary schedule, and charter schools would be barred from participating in the state Public Employees Retirement System, although the schools could offer their own retirement plans.

The schools would have to meet special education needs as well as take students who don't speak English well. But schools could design themselves to offer specialized courses of study, and could even limit themselves to just boys or just girls.

Schools would have to be non-profit, but could contract with for-profit firms for services. Internet-based schools would be allowed, although Loome and some other advocates express concern that such virtual schools have poor track records in some states.