**Why Kansas Standards are Better for Kansas Students**
**Ze'ev Wurman, Palo Alto, Calif.**
**February 14, 2013**

Chairwoman Kelley, Members of the Education Committee,

**My professional background:** I am a visiting scholar at the Hoover Institution. From 2007 to 2009, I served as a Senior Adviser at the Office of Planning, Evaluation and Policy Development in the U.S. Department of Education. Throughout the development of the Common Core standards in 2009-2010, I analyzed the mathematics drafts for the Pioneer Institute and for the State of California. In the summer of 2010 I served on the California Academic Content Standards Commission that reviewed the adoption of Common Core for California. Prior to that, in the late 1990s, I participated in the development of California mathematics content standards and framework. I served on the mathematics content review panel for the California state test since its inception in 1999 and until recently. I have published professional and opinion articles about education and about the Common Core, among others, in Education Next, Education Week, Sacramento Bee, Boston Globe, San Francisco Chronicle, Austin American-Statesman, and City Journal. In my non-educational life I am an executive with a Silicon Valley semiconductor start-up.

In my testimony today I will focus on the following points:

- The mediocrity of the Common Core standards, and the success Kansas had with its own standards
- The low level of Common Core's definition of college-readiness;
- The argued benefits of common national standards are weak and questionable, while the major increase in cost of assessment, and the loss of state autonomy, of public review, and of educational innovation are real and immediate.

**1. Quality of the Common Core Mathematics Standards**

Kansas math standards have been rated very low by the Fordham Foundation, no doubt because of their atypical organization and because of their lack of prescriptiveness, which leaves large latitude to classroom teachers. Yet despite the low Fordham rating, Kansas has developed a system where your standards seem to work for you: Kansas has been consistently among the top five states on the 4$^{th}$ grade NAEP, and among the top dozen on its 8$^{th}$ grade version.

The Common Core, on the other hand, proudly announces it will focus on only a few topics in each elementary grade because, it claims, that is what other successful countries are doing. Yet if one looks at Singapore or Korea, prominent members of that successful club, one sees that they are not nearly as narrow or as limiting as the Common Core. It seems that in its haste to be "lean and mean," the Common Core ignored many skills that those countries – and Kansas's own standards – expect of students. For example, the Common Core starts introducing the concept of money only in the second grade, while Singapore and Kansas wisely suggest starting in the first grade. Common Core forgets to teach prime factorization altogether, so it cannot ever teach least common denominators or greatest common factors. It does not teach about the area of a triangle until grade 6 or the sum of angles in a

triangle until grade 8, topics which ought to be taught in grades 5 and 6, respectively. Worse yet, even when it comes to fractions, the topic of which it is most proud, Common Core completely forgets to teach conversion among fractional forms – fractions, percent, and decimals – which has been identified as a key skill by the National Research Council, the National Council of Teachers of Mathematics, and the National Advisory Math Panel.

There is more. Even in its core focus, basic arithmetic, the Common Core opens the way for the pernicious "fuzzy math" to creep back into the curriculum. On the one hand, it expects – even if later than our international competitors – that eventually the standard algorithms for the four basic operations be mastered. On the other hand, many prior years are full with intermediate standards that repeatedly demand students to explain their actions in terms of crude strategies based on various concrete and visual models or invented algorithms applicable only to specific cases. The consequence of this skewed attention is that students will end up confused by the variety of pseudo-algorithms they are forced to study.

Stanford professor James Milgram, a member of the Common Core Validation Committee, captured it well in his testimony before the California Academic Standards Commission, saying, "*Within the document itself, there seems to be a minor war going on and this is not something we should hand over to our teachers*."[1] Small wonder that a classic fuzzy math text like *TERC Investigations* can claim that "*there is strong alignment between Investigations and the [Common Core] Math Content Standards*,"[2] or that New York's Common Core curriculum is promoting the following fuzzy foolishness: "*Working in small groups, the students rotated through the classrooms in the second-grade wing to work at the various stations. Using edible gingerbread men, the second-graders utilized their math skills by tasting the cookies and graphing which portions of the cookies that they took their first bites of*."[3]

In the middle school, the Common Core does not expect students to take Algebra 1 in grade 8, despite the fact that a large fraction of students in Kansas and across the nation already take it. All the high achieving countries, like Singapore, Korea, and Japan, expect essentially all their students to take Algebra I in grade 8, or complete Algebra I and Geometry by grade 9. Common Core abandoned this goal that promoted much of our nation's mathematics improvement over last decade, and offers it only as an afterthought, unsupported by instructional materials or assessment. Yet taking Algebra I in grade 8 is of critical importance for those who want to reach calculus by grade 12 and enroll in competitive colleges.

**2. Common Core high school mathematics and its low level of college-readiness definition**

Common Core's high school mathematics are partially experimental and of lower quality than Kansas's own programs. Its promise of college readiness for all rings hollow and will cause even larger rates of remediation in college.

But you don't have to believe me: Jason Zimba, one of the main authors of the mathematics standards,

[1] Appendix B in S. Stotsky, Z. Wurman, "Common Core Standards Still Don't Make the Grade," July 2010, includes a detailed review of the Common Core standards by Prof. Milgram. His e-mail to the Validation Committee refusing to certify them is attached to this testimony. http://pioneerinstitute.org/download/common-cores-standards-still-dont-make-the-grade/

[2] http://investigations.terc.edu/CCSS/faqs.cfm

[3] http://deerpark-northbabylon.patch.com/articles/taking-on-common-core-lessons-through-gingerbread

testified in front of the Massachusetts Board of Education[4] that Common Core's "concept of college readiness is minimal and focuses on non-selective colleges." It is hard to see how such a low level of college readiness will benefit Kansas's students.
The Common Core-recommended Algebra 1 course includes only a subset of typical Algebra 1 content. More specifically, it introduces a focus on functional aspects of algebra, while de-emphasizing its computational and technical foundations. Yet algebra is not a goal in itself, but rather a tool to support further mathematics on one hand, and support the learning of sciences on the other. An algebra course such as promoted by the Common Core will only weakly support the study of chemistry or other quantitative sciences.

Common Core replaces the traditional foundations of Euclidean geometry with an experimental approach. This approach has never been successfully used in any sizable system; in fact, it failed even in the school for gifted and talented students in Moscow, where it was originally invented. Yet Common Core effectively imposes this experimental approach on the entire country, without any piloting.

Essentially all four-year state colleges across the country, including Kansas's own universities, require at least the Algebra I/Algebra II and Geometry courses as prerequisites for enrollment. This is a rather minimal expectation for college readiness, as the growing number of students in remedial courses attests. To get a better sense of how marginal this requirement is, one may look to California's assessments for college readiness used by the California State University system conducted in grade 11. Results indicate that among students who just take Algebra 2, only 7% are ready and 22% are conditionally ready (i.e., they need to take another year of math in grade 12). In contrast, among students that take a math course beyond Algebra 2, 22% are ready and 67% are conditionally ready – a huge difference.

Yet the Common Core chose to lower the standards *even more* and eliminate content like geometric and arithmetic sequences, or combinations and permutations, from its own version of *Algebra 2* that it offers as a measure of college readiness.

### 3. The purported benefits of common national standards

Promoters of the Common Core tout the many advantages these standards are supposed to bring. Key among them are (a) comparability across states, (b) ease for students moving across state lines, (c) economies of scale in development of instructional materials, and (d) economies of scale in developing novel assessment. Further, they also argue that all high achieving countries have national standards.

The last argument is, perhaps, the easiest to dismiss. Most countries in the world have centralized education systems and hence national standards. Yet this is true of both the best performing countries as well as of the worst performing countries, and in itself means nothing. Most countries are not as large or as populous as the Unites States, and do not have a strong federal system. But those who do have a federal system with a decentralized education, like Canada or Australia, do very well on international assessments.

[4] Minutes of the Regular Meeting of the Massachusetts Board of Elementary and Secondary Education, March 23, 2010, p.5. http://www.doe.mass.edu/boe/minutes/10/0323reg.pdf

Comparability among states can be easily achieved by using a common reference like National Assessment of Educational Progress (NAEP) to compare states. Another way to compare would be to use a computer-adaptive test like Measure of Educational Progress (MAP) from the NorthWest Evaluation Association (NWEA) that is widely used across the country in both public and private schools. The Fordham Institute frequently argues these days for the need of common standards for comparability, yet in 2007 it was the Fordham Institute that easily compared standards in multiple states using precisely such methodology.[5] An advantage of using the NWEA test is that it can be quickly aligned with each state's standards, and it can provide comparison with private schools to boot. Not least, it will keep the federal government out of your schools.

Cross-state student mobility is another myth used to justify the need for common standards. Yet U.S. Census Bureau data shows that less than three tenths of one percent of students move across state lines every year.[6] It seems difficult to justify giving up on the state's ability to chart its own destiny for the sake of so few students.

This brings me to the promised economies of scale in procuring textbooks, professional development, and developing assessment. Rather than representing cost savings, they represent Kansas's inability to innovate and chart its own path to educate its own students. Kansas has about half a million students in grades K-12, and it can get a good price on any textbook it chooses. The federally funded shared assessment, however, already promises to be many times more expensive than your existing one. After all, the big money in assessment is not in its development but in its administration, and sharing the test among multiple states offers little help in its cost of administration.

Today, Kansas annually tests about 250,000 students and spends about $2.5M on that effort, or about $10/student. The Smarter Balanced estimates its assessment to cost around $25/student, and their estimate doesn't even include the cost of scoring the performance items. Those are assumed to be scored – for free! – by classroom teachers during their regular professional development. Adding the actual cost of scoring the performance items will at least double the cost of assessment to $50/student. Moreover, the cost of technology that the Smarter Balanced assessment imposes on schools is conservatively estimated at $50 per tested student every year. Given these numbers, Kansas should expect its testing budget to skyrocket from $2.5M today to about $25M in school-year 2014-15.

In summary, the Common Core standards are mediocre based on any international benchmark. Moreover, their prescriptive nature will require Kansas to revamp much of its teacher training and professional development that have actually worked quite well for you despite your idiosyncratic standards, and take away much of your teacher's autonomy in the classroom. Furthermore, your ongoing assessment costs are bound to increase tenfold. Finally, the Common Core standards tie Kansas hands to remote Washington bureaucrats and take away your ability to care for your own children the way you want, rather than the way those people in Washington want.

Thank you for your time.

[5] The Proficiency Illusion, Thomas B. Fordham Institute, Washington, DC. October 2007.
[6] U.S. Census Bureau, American Community Survey, table C07001, 2011.

========== Attachment ==========

Date: Sun, 30 May 2010 19:17:24 -0700 (PDT)
From: Jim Milgram <milgram@math.stanford.edu>
Subject: Re: Validation Committee Sign Off
To: Chris Minnich chrism@ccsso.org
CC: …

Everyone,

I have attached my detailed analysis of the May 25 final draft Math Standards. My conclusions are as follows with regard to the seven guiding questions we were asked to answer.

1) Reflective of the core knowledge and skills in ELA and mathematics that students need to be college- and career-ready

I conclude that they are, but with significant reservations that will be explained below.

2) Appropriate in terms of their level of clarity and specificity

I conclude that they are, but "appropriate" needs to be clarified. The standards are not at the level of those of the high achieving countries or the top state mathematics standards – including California, Minnesota, Indiana, and Massachusetts. Moreover this difference in level is significant, being approximately 1 - 2 years at the end of eighth grade.

3) Comparable to the expectations of other leading nations

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.

4) Informed by available research or evidence

This is also a problem area. First, as indicated in the first paragraph of my report, there are a very large number of important standards that are unique to this document, not reflective of any expectations I am aware of that appear in the standards of the high achieving countries, or that have been supported by any reliable research I am aware of. The individual standards listed on the first page of my report are analyzed in considerable detail in the body of that report. For most of them, I have indicated reasons for serious doubts as to the likelihood that serious research would validate them.

5) The result of processes that reflect best practices for standards development

I believe that they are the result of processes that reflect best practices, but the timetable was simply too short to develop a set of standards that could meet all the expectations above. For example, there are a number of actual mathematical errors in the current document that certainly would not have been present if the development had been less hurried.

6) A solid starting point for adoption of cross state common core standards

I think that they actually are a good starting point, but only that. There are problems with the approach to geometry for example. It is possible -- indeed likely -- that this approach can be worked over to be very successful. But at this time there is no research basis for it. Nor are there very many teachers in either K-8 or in the high schools who have a sufficiently strong background in mathematics to deliver it effectivly. Consequently, the approach needs considerable research both in the details of implementation and in terms of developing appropriate pre-service courses to support it, before it can be validated for what are effectively national standards.

7) A sound basis for eventual development of standards-based assessments

At this time, and for the reasons indicated, the final draft standards do not appear to be a sound basis for the development of tests. But with further work I believe that the standards could become a very sound basis indeed.

Thus, I find that I cannot currently sign off on these standards. There is always the possibility that I have misunderstood aspects of the standards, and if any of you have comments on the discussion in my report, I am certainly open to reconsideration.

As I indicate in my report there are a number of excellent areas in these standards, better than the discussions in all the state standards that I am aware of. I am sure that with more time to work on the document, all my reservations could be easily handled, and the resulting document would be first rate by any reasonable standards. As a result, I am certain that if the authors had somewhat more time to complete their work, I would be easily able to sign off on the resulting document.

Yours,
Jim Milgram