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Testimony before the
House Committee on Education
on
HB 2289 - Prohibiting the use of common core standards

by
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Madam Chair, Members of the Committee,

Thank you for the opportunity to comment on **HB 2289**. We are testifying today in opposition of this bill. We oppose this bill on two grounds. First, Kansas educators have been a part of the process to adopt the Common Core State Standards (CCSS) in both math and language arts since the beginning. The standards review process as specified by the Kansas State Board of Education was followed, which included opportunities for public feedback. Through this process, the standards were adopted. Second, there is already a growing base of anecdotal evidence which supports early success where the standards have been implemented. School districts across Kansas have already begun work to improve instructional practices to align to the CCSS, and we are encouraged by the results.

The adoption process

Kansas received the first draft of the Common Core State Standards in November of 2009. KSDE convened standards review committees for both English/Language Arts (ELA) and Math which met during the 6 month period of January to June of 2010. Committee members were chosen in order to create representation from across the state and at every level, PreK-20 and for their expertise in their content area. Throughout this time, Kansas and thus both committees received additional drafts. For each iteration, the committees provided feedback to the writing team, and as we received each subsequent draft, it was clearly evident the writers included specific elements from each round of the feedback we provided.

In March 2010, the CCSS Initiative released a draft for public feedback, which allowed for all Kansas educators and non-educators alike to participate in the review process. In June, the public received the final draft of the standards, and in July, Kansas published our version which included changes to both the ELA and math documents the committees felt were necessary (Kansas math additions are attached, including a list of math committee members). KSDE continued to receive public feedback on the standards until the chairs of each committee presented a recommendation for adoption to the State Board of Education in September 2010. The Board took action the following month adopting both sets of standards.

As you consider this bill, please remember these standards were reviewed, vetted, and approved by Kansas educators during every step of an established process. Concern over the standards being federally initiated is unwarranted. The National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) were the two organizations that began the work and Kansas has played a significant role in its evolution. As the development of assessments began, Kansas has held a leadership role within the Smarter Balanced Assessment Consortium (SBAC) as a governing state. Additionally, no other state has held more seats on SBAC committees than Kansas. We believe it is fair to state, that because of the transparent nature during both the standards and assessment development, Kansans have never had more ownership in their standards than they do with the CCSS.

Early classroom successes of implementation

Education curriculum standards state what students should know and be able to do and we use standards to measure students' progression of learning. Standards, and assessments of them, drive what teachers do with curriculum. While serving on the state mathematics standards review committee, members studied relevant research about learning progressions, content placement, and instructional strategies. Following this review, two things became clear: 1) Our then-current educational system did not adequately allow for the kinds of instructional practices which help students make meaningful connections to the curriculum (standards) or understand the content deeply, and 2) the catalyst for these much needed changes or shifts in instruction would come from the CCSS.

The math standards include content standards and practice standards, and it is with the attached 8 Mathematical Practice Standards that the greatest shifts occur. All 8 of these shifts together define "mathematically proficient students" and the skills they need. These standards expect students to be able to persevere through problem solving, reason abstractly and quantitatively, construct arguments and critique the reasoning of others, model mathematically, use tools strategically, attend to levels of precision, make use of structure in problems, and reason repeatedly. In other words, 21st century learners must apply mathematics to the world around them and think critically about the problems they attempt to solve.

Because standards, and the assessments of them, drive instruction, then it becomes necessary to ensure our instruction begins to focus on application and critical thinking skills. But the 8 Mathematical Practices are not the only shift. The CCSS include expectations at each grade level K-8 that students will work fluently with mathematics. We believe, for example, this fully meets the call for children to learn basic number facts. These standards focus on mastering curriculum and then building on and advancing to more rigorous concepts each year rather than re-teaching concepts each year.

Districts and teachers in Kansas have been working hard as they learn about how this will change their instruction in their classrooms. And the Kansas Association of Teachers of Mathematics (KATM), a state organization of over 700 members, has led the implementation of the Common Core Standards for Math. All 20 Executive Board members unanimously support these standards, and along with help from other teacher-leaders in our state, have been educating districts and teachers across the state about the standards. In 2011, KATM and KSDE held "Summer Academies" to begin to train educators on the standards and the enormous shifts in instructional practices that would need to take place for success. In 2012, the organizations again partnered in the summer to advance the previous work. In the falls 2011 and 2012, KATM held its annual conference and focused on these shifts. And last month, KATM held an additional workshop to once again help teachers gain greater understanding of the necessary shifts of instruction.

KATM is one of 33 member organizations of the Kansas Learning First Alliance (KLFA). Membership includes representative organizations from teachers, building and district level administrators, and parents among numerous others. KLFA has received updates about the state's adoption of the CCSS for the last two years. Through the entire process, KLFA has continued to support the adoption and implementation of the standards. KLFA is currently building an online resource to aid its members and educators across the state as they transition to the CCSS.

Shawnee Heights, USD #450 in Tecumseh, KS, has been one of the state's earliest adopters. Following their own curriculum review, which included analyses of relevant research in math, the district began to implement the standards and instructional shifts in August 2011. Students and teachers have witnessed the transformation in their classrooms as instructional practices began to focus more on deeper student understanding of material and requiring students to work with the mathematics in a variety of ways before moving on to new concepts. Early results from this transition include students retaining information throughout the year, student conversations about the content reflect much deeper and more meaningful understanding of the content, and students' reflections stating their enjoyment of the content is higher than it ever has been.

Now in year two of the transition, students are making connections to concepts faster than before. This means that even though the curriculum is more rigorous, students are learning more and teachers are teaching more. Teachers at Shawnee Heights point out they believe it is because of the CCSS and the instructional shifts they've had to implement. The new curriculum, which requires students to think critically and apply concepts, allows them to make connections to new material independently. These successes are echoed across the state in classrooms which have already begun to implement the CCSS.

Summary

We oppose **HB 2289** because 1) both Kansas educators and the public were afforded the opportunity to participate during the adoption process, Kansas continues to be influential in the development of supporting assessments and the result of the adoption process helped Kansans to understand the NGA- and CCSSO-led Common Core State Standards Initiative would move our state's education standards in math and language arts positively forward and 2) we have already observed classroom successes across the state evidenced by Executive Board members of KATM as they work with teachers and districts in Kansas as well as representatives of the 33 membership organizations of KLFA.

Thank you for your consideration.

Committee Members:
Jerry Braun, USD 489
*Pat Foster, USD 341
Melisa Hancock, KSU
Marjorie Hill, KU
Fred Hollingshead, USD 450
Laura Ortiz, USD 457
*Allen Sylvester, USD 501
Debbie Sylvester, USD 320
Debbie Thompson, USD 259
*Co-chairs

Overview:

The Kansas Mathematics Review Committee met regularly between February and July, 2010 to review drafts of the Common Core State Standards, provide feedback to the national writing group, and develop recommendations for additions to the Kansas version of the Common Core State Standards for Mathematics. In the early drafts, the committee found many areas that needed revision and provided extensive feedback/suggestions to the writing group. As each draft was released for review and comment, the Kansas group found that many of their recommendations had a direct impact on changes that were made in later drafts. In fact, though no one can be certain how many states might have provided similar feedback to Kansas, in some cases it seemed as if the authors had taken the Kansas recommendations and incorporated them virtually word for word. This is important to note in any explanation of the recommendations for additions to the Common Core State Standards, since many of the items identified early in the process for inclusion in the 15% additions for Kansas actually became part of the Final Draft document and therefore reduced greatly the volume of recommendations contained here.

The Kansas Additions to the Common Core State Standards for Mathematics focus on two major topics: Probability and Statistics as well as Algebraic Patterning. Connections to these topics can actually be found sporadically through the Common Core State Standards document, but they were not addressed with the same level of emphasis that had been historically given to them in Kansas standards. In recognition of the long history in Kansas of the ability for local school districts to make decisions for themselves; the review committee felt strongly that these topics should be set aside from the detail of the main document with enough information provided for each school and/or district to decide how to incorporate them for themselves.

The information in the following two pages is intended to help districts review these content areas and insure their coverage in their curriculum planning, but not to dictate at what grade level(s) it is most appropriate to emphasize them. Each begins with a short paragraph discussing the coverage of the topic on the Common Core State Standards and a rationale for additional emphasis. This is followed by a set of "Curricular Considerations" that can be used by districts to guide discussions about how to integrate these topics. Finally, each topic includes a sample list of references and outside resources that might aid in the discussions.

Algebraic Patterning
(adopted from the Kansas College and Career Readiness Standards, 2013)

Working with patterns is mentioned in the Common Core document as a Practice Standard (Standards for Mathematical Practice #7) and briefly as a part of some of the elementary standards, starting in grade 3. Because pattern recognition is key to preparation for algebraic reasoning, this recognition of patterns needs to be emphasized in all elementary mathematics, beyond the specific references found in the Common Core State Standards, which are primarily limited to numeric patterns.

Curricular Considerations (Questions for Teachers):

- Recognition of the difference between repeating and growing patterns? – Primary Grades
- Can students explain patterns or state the rules of a pattern? – Primary Grades
- What focus is there on the relationships between operations (addition/subtraction, multiplication/division, etc.) and the patterns that are related to these?
- Is there an emphasis on modeling patterns with equations? – Upper Elementary and/or Middle School
- Is there an emphasis on both numeric and other patterns at all grade levels?
- What topics in my curriculum already include patterns (though not explicitly stated) or could easily incorpo-rate them?
- What can we learn/gain from the references below that we could use to improve the teaching of patterning in our classrooms?

Sample Reference Documents:

- Focal Points from NCTM (2006)
- Marilyn Burns, About Teaching Mathematics (2000)
- John Van de Walle, Teaching Student Centered Mathematics (Grade Banded, 2006))
- John Van de Walle, Elementary and Middle School Mathematics, Teaching Developmentally (2010)
- Navigation Series from NCTM
- Principles and Standards from NCTM (2000)
- Mark Driscol, Fostering Algebraic Thinking (1999)
- Kathy Richardson, Developing Number Concepts, Book 1 (1998)
- Kim Sutton, All Aboard the Algebra Express (2010)
- Randall J Souviney, Learning to Teach Mathematics (1993)
- Terry Bergeson, Teaching and Learning Mathematics (2000)

Probability and Statistics

(adopted from the Kansas College and Career Readiness Standards, 2013)

While probability and statistics is found in the Common Core document, it does not begin until the 6th grade. Some instruction and experience with real-life situations at earlier grades will strengthen this strand of instruction for students. In particular, students should be exposed to the ideas of possible vs. impossible, likely vs. not likely, and properties of sets of data with contextual examples.

Curricular Considerations (Questions for Teachers):

· What types of data displays are appropriate for what grade levels, how are they already being used, and how can they be reinforced in context?

- tables
- data points
- line graphs
- scale
- units of measure
- etc.

· At what grade level is it most appropriate to ask students to identify the item that occurs "most often"?

· At what grade level is it appropriate to ask students to identify the "middle" value in an ordered set?

· At what grade level is it appropriate to ask students to identify the "spread" of a data set?

· At what grade level can students distinguish between possible and impossible events? Likely and unlikely?

· What topics in my curriculum already include probability and statistics (though not explicitly stated) or could easily incorporate them?

· What can we learn/gain from the references below that we could use to improve the teaching of probability and statistics in our classrooms?

Sample Reference Documents:

· Focal Points from NCTM (2006)

· Marilyn Burns, About Teaching Mathematics (2000)

· John Van de Walle, Teaching Student Centered Mathematics (Grade Banded, 2006)

· John Van de Walle, Elementary and Middle School Mathematics, Teaching Developmentally (2010)

· Navigation Series from NCTM

· Principles and Standards from NCTM (2000)

· Randall J Souviney, Learning to Teach Mathematics (1993)

· Terry Bergeson, Teaching and Learning Mathematics (2000)

Standards for Mathematical Practice (adopted from the Common Core State Standards for Math, 2010)

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. **Make sense of problems and persevere in solving them.**

   Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. **Reason abstractly and quantitatively.**

   Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. **Construct viable arguments and critique the reasoning of others.**

   Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. **Model with mathematics.**

   Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. **Use appropriate tools strategically.**

   Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. **Attend to precision.**

   Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. **Look for and make use of structure.**

   Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. **Look for and express regularity in repeated reasoning.**

   Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.