South Carolina Parents Involved in Education

South Carolina ELA and Math Standards

Common Core Once More

Sheri Few, President

January 2015


Angry White Suburban Mom
ANGRY WHITE SUBURBAN MOM


Parents Involved in Education
Anti-American AP US History
STOP COMMON CORE


NO DATA MINING


"I DO NOT LIKE THAT COMMON CORE"
STOP COMMON CORE


South Carolina Department of Education
Visitor Entrance

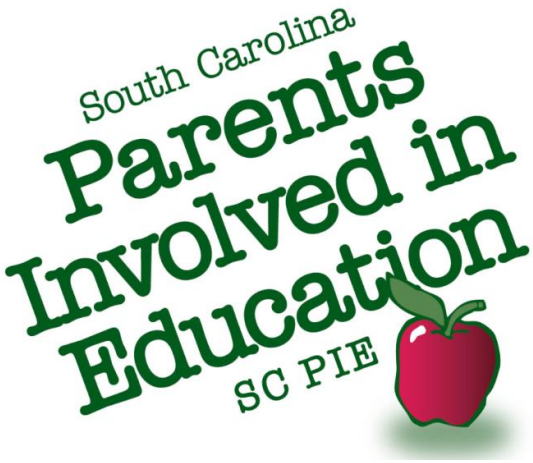

STOP COMMON CORE


STOP COMMON CORE!


mon Sense tells us
n Core is bad for kids!
more: www.scpie.org
STOP COMMON CORE


COMMON CORE


STOP COMMON CORE



South Carolina ELA and Math Standards

Common Core Once More

SHERI FEW

President

Contributors:

Deb Marks

Roger O'Sullivan

Johnelle Raines

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Introduction

In response to the overwhelming outcry from parents and taxpayers during the 2014 legislative session, the South Carolina Legislature passed a bill requiring the State Department of Education to rewrite the Common Core Math and English Language Arts (ELA) Standards.

The legislation mandated the rewrite of the Common Core Standards to begin "on or before January 1, 2015," and Superintendent Mick Zais began the rewrite process immediately upon the new law taking effect in June 2014.

This report exposes the faulty rewrite and review processes implemented by the South Carolina Department of Education (SCDE); the faulty review process of the Education Oversight Committee (EOC); violations of state law; and possible copyright infringements.

In addition, comments of national experts who reviewed the new standards are included in the report.

Finally, when it comes to education policy and curriculum content, the report reveals a fundamental problem greater than faulty standards: a vast disconnect between parents and taxpayers, and South Carolina educators.

November 2013 Keep Your Child Home from School Day Protest

Following report conclusions, South Carolina Parents Involved in Education offers recommendations for solving the problems presented herein.

Standards Writing Process

South Carolina law prescribes a process for regular review of education standards through the Education Accountability Act of 1998 (EAA). The mandatory rewrite of Common Core was encapsulated in an amendment to the EAA. Specifically, Act 200 states that "For the purpose of developing NEW [emphasis added] college and career readiness English/language arts and mathematics state content standards, a cyclical review must be performed pursuant to subsection (A) for English/language arts and mathematics state content standards…."

The word "new" used to describe the purpose of the bill was inserted by legislators to mandate replacement of the Common Core Standards. The term "new" was also the operative word used to ensure that the State Department of Education's selected method for the review/rewrite process would not include reviewing Common Core. However, the Education Oversight Committee (EOC) disagreed with this approach and vowed to review the Common Core Standards rather than replacing the faulty standards with new ones.[1] This was clearly a violation of state law as amended.

South Carolina Parents Involved in Education (SCPIE) represents thousands of households throughout the state, and for nearly three years, SCPIE has been actively engaged in calling for a full repeal of the Common Core Standards. This is why SCPIE reached out to South Carolina Department of Education (SCDE) staff in July 2014 to provide input into the standards rewrite process.

SCPIE pointed out to SCDE staff that South Carolina law requires a task force of parents, business and industry persons, community leaders, and educators as a part of the cyclical review/rewrite process.

Unfortunately, SCDE chose to exclude the task force from the REWRITE process and relegated the task force to the REVIEW process, along with the general public after

the writing was complete. This resulted in another violation of state law as amended.

Due to the fact that parents, business and community leaders did not have input into the writing process, SCPIE consulted experts and combined it with their own research in order to provide guidance to the writing team.

The SCPIE guidance document describes things to be considered in a rewrite to adequately respond to parents and taxpayers who were the catalyst for the legal mandate to replace Common Core.

In conversations with SCDE staff, SCPIE warned against simply rebranding the Common Core Standards as had happened in other states whose citizens rejected the Common Core Standards.

SCDE staff agreed to not only provide the SCPIE guidance to the writing team, but also assured SCPIE the guidance document would be given to the writing panels as a directive to ensure the new standards would not reflect the failed education philosophies found in the Common Core Standards. The SCPIE guidance document is in the Appendix.

In September 2014, Joan Almon, Executive Director of the Alliance for Childhood prepared early childhood guidelines for the writing panels in order to address the developmental inappropriateness found in the early grades of the Common Core Standards. SCPIE forwarded Almon's guidelines to SCDE staff who assured SCPIE that the guidance would be provided to the writing panels. Almon's early childhood guidelines are in the Appendix.

In reviewing the new standards, it is apparent that neither the SCPIE guidance, nor the early childhood guidance, was used to direct the rewrite process. This is further evidenced by national experts' comments following their review of the "new" standards and this is well-documented herein.

The experts' comments also reveal potential copyright violations within the "new" set of standards as many of the standards are word-for-word Common Core.

Additionally, it would be remiss not to question the choice of standards provided to the writing team as resources for their task. The SCDE created a chart for the teachers

containing the current standards (Common Core); the standards we had in place before Common Core; and standards from several states that have approved "college- and career-ready" standards that are not Common Core. The math writing panel was provided standards from Indiana, Minnesota, Nebraska, and Texas. The English language arts (ELA) writing panel, was provided standards from Indiana, Nebraska, and Texas. "[2]

SCDE staff and Superintendent Zais were warned by national experts against Indiana standards as guides for the writing team, as they were simply a rebranding of Common Core, but nonetheless, these faulty standards were offered as a resource to the writing panels.

Dr. Zais and His Staff Meet with National Experts

The greatest flaw in the rewrite process was the neglect to offer the nation's most proven effective model for education standards. If South Carolina wanted to develop and implement a proven effective model for rigor and college readiness, Massachusetts standards would have been used as the primary resource for the writing panels.

The former Massachusetts ELA and math standards, prior to Common Core, were renowned as the best in the nation and ranked in the top ten internationally.[3]

Massachusetts has a history of high standards and steadily rising test scores since 1993. Massachusetts students excelled on the National Assessment of Educational Progress, given to fourth-, eighth- and sometimes 12th-graders in both private and public schools across the country. The state ranked sixth in the world in math on the 2011 Trends in International Mathematics and Science Study and measured with 63 countries and nine American states, scored in the company of Japan, Singapore, and South Korea.[4]

Not providing the proven effective Massachusetts standards as a basis for writing new standards for South Carolina children was a mistake that defies all wisdom.

Standards Review Process

The new ELA and math standards intended to replace Common Core were reviewed by a process implemented by two State governing bodies: the South Carolina Department of Education and the South Carolina Education Oversight Committee. Both processes were flawed and violate state law.

SC Department of Education Review

As mentioned, the SCDE did not allow the state mandated parent, business and community task force to participate in the writing process. Instead, the Task Force was asked to review the final draft of the standards along with the general public.[5] Nonetheless, a Task Force was selected through a presumed nominating process.

Several parents and tax-payers that had grave concerns about the Common Core Standards went through the lengthy process to nominate a slate of 16 screened candidates to represent their shared concerns. This should have resulted in the nomination of these sixteen people multiple times, and one would think those 16 individuals should have been given a priority status for multiple nominations.

However, only 3 of the 16 nominees were appointed to the Task Force, which included 46 total members.[6]

Before the Task Force was selected, SCDE contacted SCPIE and offered an opportunity to recommend two people to participate in the Task Force review. Unfortunately, neither of two individuals SCPIE recommended was chosen for the Task Force.

In reviewing Task Force membership affiliations, it appears the SCDE attempted to appoint an equal number of people who support Common Core as those who oppose it on the Task Force. While this seems fair, it couldn't possibly be productive unless the members had opportunities to work together in an attempt to reach consensus, which was not the case. This flaw in the process is certainly reflected in the reviewers' comments.

Many Task Force members said the limited time allotted to review the rather voluminous new standards, and the lack of face-to-face meetings, caused many hindrances for the assigned task.

The SCDE also published the new standards online for public review.[7] Unfortunately,

those who wanted to voice concerns about the standards were encumbered by a tedious process of an online survey that required respondents to evaluate each individual standard. Given the magnitude of the volume of the new standards, it was nearly impossible for a parent or community members to take the time necessary to do a meaningful review and provide input.

Education Oversight Committee Review

The Education Oversight Committee (EOC) had a different approach to their review. The EOC interpreted the law that deals with the cyclical review as including a review of the current content standards.[8] Therefore, they set out to review Common Core as if to simply make edits to the standards, which were mandated to be replaced.

In July 2014, the EOC initiated their cyclical review and asked for nominations of individuals to serve on panels to review the current standards (Common Core).[9] Members of the EOC were allowed to submit names for the panels and asked to submit nominees based on these categories: parents, business/industry, teachers of English language learners or special education and higher education.

The EOC then solicited recommendations for Academic Standards Review Panels from district superintendents, instructional leaders, business/community leaders and representatives of higher education.[10]

A total of 50 people were selected by EOC staff to participate on the panels. Of the panel members chosen, 76% were educators while only 24% were from parent and/or business/industry categories. [11]

The EOC contracted with the Center for Instructional Technology at the University of South Florida to develop an Academic Standards Review website, which was also launched in July 2014.[12] The survey required responders to make comments on each individual standard rather than making general, or overall comments, like: "The kindergarten standards are developmentally inappropriate," or "Algebra 1 should be offered to all students in the eighth grade."

The public was invited to provide input via the online survey (http://scstandards.org), but due to the fact that the survey was not user-friendly, much like the one that was used by the State Department of Education, it is doubtful many parents or other concerned citizens took the time to sift through the convoluted survey process.

Standards According to the Experts

Sandra Stotsky developed one of the country's strongest sets of academic standards for K-12 students while serving as Senior Associate Commissioner in the Massachusetts Department of Education from 1999-2003. She also served on the Common Core Validation Committee which led to her becoming known nationwide for her in-depth analyses of the problems in Common Core's English language arts and math standards.[13]

Professor Emerita Sandra Stotsky
University of Arkansas

In October 2014, Professor Stotsky reviewed the new South Carolina standards intended to replace Common Core.[14]

Professor Stotsky reports that the new standards are inadequate and non-assessable and gave this example from grade 9: "2.: Extend and deepen understanding of content through purposeful, authentic, real-world tasks to show understanding and integration of content within and across disciplines." Of this standard she says, "This is a muddy statement that means almost nothing." She also advised that "the revision committee and the South Carolina Department of Education should be asked to come up with a short list of assessable and understandable (and authentic) standards."

> ***"The entire structure is Common Core's and the whole mess needs to be rejected by the legislature."***

Furthermore, too many of the standards, she points out, begin with non-assessable and non-teachable words like: "employ," "use strategies to," "value," "expand," "explore," "deepen," "ask," "focus," "broaden," "transact," "engage in," "develop," "acknowledge," "communicate," "adjust," "create," and many others.

Stotksy says that South Carolina's old standards were far superior to Common Core standards and to these. She also pointed out that the old standards pointed to authentic content, which these standards do not.

One major problem with the new standards intended to replace Common Core, according to Professor Stotsky, is that they equate to a "mess of words" that "is excessive and overkill." She suggests that "teachers cannot possibly read through and grasp what is going on" in the new standards. Stotsky advises that all that is needed is a short list of proposed standards, grade by grade, no longer than twelve pages, and one page per grade level.

Finally, Professor Stotsky commented that these standards were not only like Common Core, but they are even worse than the Common Core standards. Stotsky's complete comments can be found in the Appendix.

Dr. R. James Milgram, professor of mathematics at Stanford University, has lectured around the world and has been a member of numerous boards and committees including the National Board of Education Sciences.[15]

Professor Milgram has extensive experience developing mathematics standards throughout the nation, and was one of 25 members serving on the Common Core Standards Validation Committee; the only content expert in mathematics.[16]

"They are not exactly, deficient. What they are is blindingly ignorant."

Professor Emerita James Milgram
Stanford University

Traveling the country testifying to state legislatures about the faulty Common Core Math Standards, Milgram has said the standards are "…written at a very low level and does not adequately reflect our current understanding of why the math programs in

the high achieving countries give dramatically better results."[17]

Following a review of South Carolina's new math standards intended to replace Common Core, Milgram had this to say, "They are not, exactly, deficient. What they are is blindingly ignorant." However, he says, "The outline of these standards is significantly superior to Common Core, but the details are filled with problems, including outright errors, misunderstandings, and improper preparation for the individual standards. Also, in too many places there are far too many standards, and more than a relatively small percentage cannot be covered in the time allotted."

In order to fix the problems with the new SC math standards, Milgram suggests, "…at least one actual math content expert – NOT A 'MATH EDUCATOR' WITH A DEGREE FROM AN ED SCHOOL – is needed to go over the individual standards with a fine tooth comb and fix them." That's not all. After that he says, "…the standards will still need a serious 'pruning' as there are far too many of them, and they simply create the 'mile wide and inch deep' situation that Common Core was supposed to avoid."

Here are a few examples given by Professor Milgram in his report on the new standards:

"8.F.4 (a) does NOT explain what "slope" is. What is a constant rate of change? The standard definition of slope is "rise over run," and then provide examples to interpret this.

8.F.4 (c) is so vague as to be meaningless. This is another point where examples are essential. Actually, one should insist on these changes as SLOPE is one of the absolutely most basic things one learns about in Algebra I. If the authors of this document are not capable of filling in the examples and focusing in on the key properties and applications of the slope, then I would strongly suggest that you form a new committee to fix things.

"…at a minimum, there have to be EXAMPLES to illustrate what this word salad means."

8.F.5 Again, I have no idea what this standard is meant to mean. Frankly, I have my doubts about the knowledge of the subject shown by the authors, but at a minimum, there have to be EXAMPLES to illustrate what this word salad is supposed to mean."

Professor Milgram gave several more examples of the problems with the new math standards and his entire comments can be viewed in the Appendix.

Finally, Milgram sums up his report on the new standards by saying, "…the standards just go on, and on, and on, including far more than could be handled in any one year course. This sequence must be entirely rethought and revisited."

Chief Software Architect & Former US Department of Education Senior Policy Advisor Ze'ev Wurman

Ze'ev Wurman holds B.Sc. and M.Sc. degrees in Electrical Engineering from Technion, Israel Institute of Technology, in Haifa, Israel. He has published technical papers in professional and trade journals and holds seven patents.[18]

Wurman has over 30 years of experience in developing algorithms, CAD software, and hardware and software architectures. He spent three years with IBM Research in Haifa, Israel, working on algorithms for design verification, databases, and cryptography.[19]

Between 2007 and 2009, Wurman served as senior policy adviser in the US Department of Education under President George H. W. Bush, and in 2010, Wurman served on the California Academic Content Standards Commission that evaluated the suitability of Common Core's standards for California.[20]

In November 2014, Wurman reviewed the new SC math standards intended to replace Common Core. In summation he says, "Bottom line, K-8 are essentially badly re-written Common Core with a few minor and inconsequential changes. 9-12 is augmented and almost-decent set of standards that is in need of serious language cleanup for clarity."

In more detail, concerning the K-8 standards and their similarity to the Common Core Standards, Wurman says, "…the SC draft is, indeed, very much based on the Common Core. Sometimes the language is changed,

rarely improving the original, and frequently actually even perverting the Common Core original and creating less-clear and sometimes completely incomprehensible standards."

Wurman advises that "essentially most of

"Bottom line, K-8 are essentially badly re-written Common Core with a few minor inconsequential changes…"

Common Core has been retained" in K-8, which includes "…an early and unprecedented focus on 3D shapes, there is the delayed learning about area of triangles (grade 6) or the sum of their angles (grade 8) or circles (grade 7)." He also criticizes the new math standards for its similarity to Common Core in the fact that they will "not lead many kids to taking Algebra I," which is an accomplishment necessary in grade 8 for STEM careers or advancing beyond junior or technical colleges.

Finally, Wurman suggests that "…these standards sometime use the word "DISCOVER" which is defined as (p.24) 'The word discover in a standard indicates that students will be given the opportunity to determine a formula through the use of manipulatives or inquiry-based activities.' In other words…" Wurman concludes "… the standards directly and explicitly dictate pedagogy – not a good idea, and perhaps even unconstitutional in South Carolina if LEAs [local education agencies] are supposed to be in charge of curriculum."

Joan Almon co-founded the Alliance for Childhood and served as the Executive Director until 2012 when she partially retired and became its director of programs. Almon was formerly a Waldorf early childhood educator who taught for 18 years in Maryland schools and then consulted with schools around the world.[21]

Co-founder
Alliance for Childhood
Joan Almon

In 2010, as Executive Director of the Alliance for Childhood, Almon led the effort to issue the *Joint Statement of Early Childhood Health and Education Professionals on the Common Core Standards Initiative*. The Statement was signed by more than 100 early childhood specialists from the most prestigious colleges and universities in the country, and other experts in the field.[22]

Just before many states rushed to adopt the Common Core Standards in order to gain advantage for federal funding opportunities, the Alliance for Childhood's *Joint Statement* expressed "…GRAVE CONCERNS about the core standards…" and revealed that the Common Core Standards "conflict with compelling new research in cognitive science, neuroscience, child development, and early childhood education about how young children learn, what they need to learn, and how best to teach them in kindergarten and the early grades."

SCPIE sponsored Ms. Almon's trip to South Carolina in May 2013 to testify before the SC Senate Education Committee. Before committing to come to SC to testify, Ms. Almon warned SCPIE of her politically progressive ideology on most matters, but SCPIE assured Ms. Almon that her political philosophies on other issues were actually advantageous to our cause by illustrating the bi-partisan concerns regarding the Common Core Standards.

"Unfortunately, the SC kindergarten standards repeat some of the worst standards from Common Core and even do so word for word."

Almon's complete testimony to the SC Senate Education Committee is found in the Appendix.

Almon agreed to review the K-3 portions of the new SC standards intended to replace Common Core. What she found is not surprising in light of what the other experts had reported: Common Core once more.

In response to SCPIE's request for a review of the new SC standards intended to replace Common Core, Ms. Almon says, "Where do I begin? Unfortunately, the SC kindergarten standards repeat some of the worst standards from Common Core and even do so word-for-word. Of both the Common Core Standards and the new SC standards intended to replace Common Core, Ms. Almon says, "…we are very concerned about the standard that calls for kindergarten children to read 'emergent literature with purpose and understanding'." She goes on to say that this

is something first and second graders are developmentally ready for but not kindergarteners.

Regarding the new kindergarten math standards, Almon says, "It's not so bad to require children to count to 100 even though numbers over 15 or 20 have little meaning for children this age. But to ask them to start counting at any number below 100 and go forwards takes this to a new level." "Impossible?" she asks, and then responds, "No, but pointless. The long-term effectiveness of such standards is unproven. It's all abstract and time consuming, and copied directly from CCSS [Common Core Standards] which claims to be evidence-based, but it is not."

Just this month, Almon and her colleagues released a report titled: "Reading Instruction in Kindergarten: Little to Gain and Much to Lose." In it they include several recommendations. One recommendation is that kindergarten standards be removed from Common Core so that they can be rewritten along developmental lines.

Almon further recommends South Carolina do the same: Let the standards begin with first grade and then establish developmentally appropriate guidelines for pre-K and kindergarten.

Conclusions

The new standards are a violation of South Carolina law and remain developmentally inappropriate for young children.

The South Carolina Legislature mandated a cyclical review of the state's English language arts (ELA) and math standards for the purpose of creating new standards and the law requires a task force of parents, business and community members to be appointed for the cyclical review process. By not appointing the Task Force until after the cyclical review had been completed by the writing panels, and relegating the Task Force to reviewing the standards at the same time as the general public, the State Department of Education clearly violated State law.

The Education Oversight Committee (EOC) chose a different path of violating the law by initiating a review of the Common Core Standards as though the Legislature's intent was to tweak the Common Core Standards rather than replace the standards.

The result of these flawed processes, which proceeded in the violation of the Education Accountability Act as amended, is a weak repeat of the Common Core Standards and falls far short of the expectations and requirements of parents and legislators.

Finally, throughout the last two years of intense activism, SCPIE has observed a huge chasm between educators, and the parents whose children they teach, and the taxpayers that pay their salaries. This chasm grows ever wider as parents and taxpayers are shut out of the process of deciding what is in the best interest of their children's education and how their tax dollars are spent.

Although research proves that parental involvement is the number one predictor for strong educational outcomes,[23] meaningful parental involvement is nonexistent in the current public education system.

If South Carolina is going to do what is in the best interest of children, they will listen to the well-documented facts of the experts and eliminate Common Core, and the failed education philosophies behind the standards.

Recommendations

1. The State Department of Education should direct the standards writing panels to go back to writing immediately with HEAVY reliance on the proven and internationally recognized Massachusetts standards. Moreover, future upgrades of South Carolina standards should avoid common core versions, which have been proven to be flawed, and rely on the best practices offered by the Massachusetts model.

(MA 2001 ELA Standards can be downloaded here: doe.mass.edu/framework/ela/0601.pdf, and the MA 2000 Math Standards can be downloaded here: doe.mass.edu/framework/math/2000/final.pdf.)

2. The Legislature should review the law for the purpose of clarifying the intent of the Task Force in the cyclical review process, and tighten the language so there can be no mistake as to the purpose and role of the parent, community and business task force.

3. Kindergarten standards should be eliminated. Imposing academic standards for kindergarten students is developmentally inappropriate.

4. The South Carolina Legislature should find ways to ensure parents who are not educators, and taxpayers who are not educators, have more meaningful input into public education content and delivery.

5. In light of the seemingly irreparable disconnect between educators and parents, it is incumbent upon the Legislature to expand school choice options that allow parents to choose the education that is in the best interest of their children.

Appendix

SCPIE Writing Panel Guidance

Guidance for Rewriting Common Core ELA and Math Standards

South Carolina Parents Involved in Education SC PIE

General

1. In accordance to SC Code of Laws, Act 275 "(1) provide instruction in cursive writing to ensure that students can create readable documents through legible cursive handwriting by the end of fifth grade; and (2) require students to memorize multiplication tables to ensure that students can effectively multiply numbers by the end of fifth grade.

2. Define "rigor" as requiring a high level of academic-content knowledge."

3. Define "critical thinking" as "logical, linear, analytical thinking in which facts are assembled and analyzed to reach a conclusion," or something like this.

   For precedent, this is from an Oklahoma statute: "All subject matter standards and corresponding statewide student assessments . . . shall be carefully circumscribed to reflect direct application to subject matter proficiency and shall not include standards or assessment questions that are designed to collect or measure noncognitive, emotional or psychological characteristics, attributes or skills of students."

4. Ensure grade/age and developmental appropriateness particularly in the K-3 standards.

English

1. English grammar shall be taught as an independent subject, every day, for one or two years in the middle grades (5th and 6th, typically). The aim should be a thorough mastery of the elements of our native tongue, and a habit of writing with clarity and flair.

2. Once children have learned how to read the words on a page, and have a sufficiently sophisticated vocabulary, ALL of their reading in English courses should be literary: lyric poetry, epic poetry, dramatic and narrative poetry, drama, short stories, novels, and, as they grow older, occasional literary essays from such writers as Johnson, Emerson, and Twain. Contemporary "popular" literature, especially that which is marketed to young adults, should be discouraged. Articles from newspapers and magazines have no place in English courses. Special care should be taken to provide all students with a broad acquaintance with the great British poets and fiction writers from the poet of Beowulf to Seamus Heaney, and with the great American poets and fiction writers from Edward Taylor to Flannery O'Connor. Texts should be chosen for their inherent literary greatness, rather than for popularity, or for any extraneous political reasons.

3. The standards need to indicate overtly that 80% of the reading curriculum in grades 6-12 must address imaginative literature. No more than 20% at each grade level in the English class of nonfiction (essays, speeches, biography, autobiography, e.g.).

4. Half of the literary works studied in 8-12 must have been published before 1970.

SCPIE Writing Panel Guidance Continued

5. Each standard must be accompanied by 1 or 2 sample titles chosen by high school English teachers to show the level of reading difficulty/complexity.

6. Majority of the standards-writing team must be experienced, well-trained high school English teachers and English professors selected by a discipline-based organization such as the ALSCW.

Math

1. Define a tiny set of benchmarks/capstone standards for K-5, i.e.:
   - Fluency with addition and subtraction of multi-digit whole numbers by grade 3 using the standard algorithms
   - Fluency with multiplication and division of multi-digit whole numbers by grade 4 using the standard algorithms
   - Fluency with 4 arithmetic operations on decimals by grade 5
   - Fluency with 4 arithmetic operations on fractions by grade 5

2. Algebra in grade 8, ideally, should be a target to be achieved a few (say-5-7) years down the line. Given California experience you don't want to push harder.

3. Make sure that HS content is sufficient to promote both true college readiness and STEM readiness.

   Nothing about geometry etc., except to repeat many, many times (at least two-three) that the standards should avoid dictating pedagogy and focus on content, unless there is a clear and unequivocal scientific evidence of success of that particular pedagogy. Anywhere a particular pedagogy is expressed/demanded, it should really have a non-contested record behind it. There is little of that kind around.

   These are on par with places like Singapore or Korea.

4. Use terms like "students should be prepared to take the first authentic algebra course, as defined in the Presidential National Advisory Mathematics Panel report, by grade 8. This transition may take up to X # of years, by which time at least 70% of the cohort will be taking the first algebra course by grade 8."

5. Make sure that the HS content has A1/A2/Geometry defined (steal California if you want) *plus* definitions of Trig course, pre-calculus course, and calculus course. Steal content from Mass. or Calif. if needed. Define HS content up to and including calculus, making clear that not every student will need all of it.

Alliance for Childhood Guidelines for Well-balanced Kindergartens

Guidelines for Well-Balanced Kindergartens

Prepared by Joan Almon

Alliance for Childhood

(www.allianceforchildhood.org)

September 2014

Background

States rejecting Common Core State Standards or seeking ways to modify them have the opportunity to create new kindergarten goals that reflect what is known about the development of children at this age. In contrast, Common Core standards are based on the belief that kindergarten children can perform at a first grade level. There is little evidence to support this supposition, and as a result there is now a stark contrast between what is required of kindergarten children and what most of them are developmentally ready to do. The bar has been set arbitrarily high. Some children cross it easily while others do so under considerable stress and may suffer long-term effects, including burn-out. And many fall short of the mark through no fault of their own.

A recent University of Virginia study looked at kindergarten data and confirmed that by 2006 kindergartens had become the new first grade. Under Common Core the situation is becoming even more extreme. One of the U.VA. researchers, Daphna Bassok, commented on their findings, saying: "Academic skill-building has really taken center stage in today's kindergarten classrooms, in a way that just wasn't the case [before]." She adds, "It certainly doesn't have to be an 'either/or' scenario, where academics crowd out everything else, but I worry that in practice, this is what is happening in many classrooms."[i] The study found that literacy activities, in particular, were crowding out much else. Yet despite such an emphasis on early literacy instruction, reading scores in the U.S. have barely progressed in the past two decades, as we discuss below.

One frequent argument for speeding up the curriculum is that kindergarten children today are smarter than in the past and can now handle first grade material. But is that true? Today's children know different things than children a generation ago did. They know a great deal about using digital technology, for instance, but very little about using their hands for engaging with the three-dimensional world.

Recent research shows that young children's basic cognitive development has not changed over many years. In 2012, the Gesell Institute in New Haven completed a study of nearly 1300 children in 23 states to determine if children's cognitive development had changed since they had first measured it. It found that "children were still reaching important developmental milestones in much the same time frame as they did when Dr. Arnold Gesell first collected and published his data in 1925." The Harvard Education Letter described the study saying, "Children have not changed but kindergarten has."[ii]

Although most developed countries do not begin formal instruction until children are between six and

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

seven, the U.S. begins at five or younger. The current movement toward cognitively-oriented kindergartens began in the 1970s at the same time that Germany converted its kindergartens from being play-based and experiential to becoming cognitive centers. German researchers followed children from 50 classes using each of the two approaches. By fourth grade the children from the play-based kindergartens did so much better on all measures used—academic, social-emotional, and industriousness—that Germany switched its kindergartens back to being play-based and experiential.[iii] Unfortunately, the United States has never done a comparable long-term study of its kindergartens.

What do children at this age need for successful learning? Most children thrive in kindergarten if they are given two types of experiences, along with warmth from caring adults:

a) Ample time for self-initiated learning through exploration and play; and
b) Developmentally appropriate content that builds on children's knowledge and is offered by teachers in engaging ways.

Appropriate content can include a host of experiences from storytelling and reading books, to playing with numbers and mathematical materials. Children absorb content readily when it is embedded in the life of the kindergarten rather than extracted into specific lessons. Studies that looked at the impact of various literacy programs for young children, for instance, found that the most effective methods used brief, hands-on activities with warm, sensitive interactions. Lengthy whole-group lessons and worksheets did not prove to be as effective.[iv]

Kindergarten children need ample time for child-initiated play and exploration, both indoors and out, along with shorter concentrated times for teacher-led activities. Today's kindergartens tend to reverse these time periods devoting most of the day to teacher-led instruction and very little time for child-initiated learning. This imbalance frequently results in high levels of stress and frustration in the children and contributes to serious behavioral problems.[v]

Many teachers and school leaders are fearful of child-initiated play and equate it with chaos. But in well-organized programs that are respectful of children, play tends to be focused and purposeful. In play-based kindergartens around the world, children select and direct their own play themes, and teachers often speak of a hum that fills the room when children are deeply engaged in play. In such play children integrate and digest everything they have learned in school, at home, or in other settings. Their minds develop through play, but also their ability to self-regulate and to engage socially with others. Children have a genius for play. Lev Vygotsky, a well-respected Russian psychologist, said that when children play they stand a head taller than at other times. A great deal of knowledge and wisdom fills children's play.

In strong play-based kindergartens teachers support children's play without directing or dominating it. At times they may need to intervene, especially at the beginning of the school year with children who are not experienced players. When and how a teacher intervenes is often a delicate matter, but the end goal is clear—to help children become competent, creative players, alone and with others.

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

A joint position statement by the National Association for the Education of Young Children (NAEYC) and the National Council of Teachers of Mathematics (NCTM) includes a description of how play in preschool and kindergarten enhances the learning of math and other subjects:

> Children become intensely engaged in play. Pursuing their own purposes, they tend to tackle problems that are challenging enough to be engrossing yet not totally beyond their capacities. Sticking with a problem—puzzling over it and approaching it in various ways—can lead to powerful learning. In addition, when several children grapple with the same problem, they often come up with different approaches, discuss, and learn from one another.[vi]

In general, children enter kindergarten with a certain level of cognitive development and a storehouse of life experiences. Unfortunately, there is often a gap between those who come from more affluent, well-educated homes and those who do not. But if kindergarten teachers build on children's own development and understanding of the world, they can close the gap more effectively than if they confront children with arbitrarily established standards and "drill and kill" practices.

In this paper we address specific questions of how kindergarten children learn and guidelines for teaching math and literacy. But the same principles apply to teaching science, social studies, and other subjects.

- Respect children's experiences and knowledge and build on them.
- Embed lessons in the experiences of the kindergarten rather than through abstract or didactic situations.
- Allow much time for play and other forms of self-initiated learning during which children can digest new content and make it their own.

When kindergarten teachers offer a healthy balance of creative play and activities related to math, language development, nature, and the arts, they help children develop well-rounded minds that are at home with the STEM subjects but also with the arts and humanities. This balanced approach supports children's healthy cognitive development, as well as their social-emotional and physical development.

For developing appropriate guidelines for kindergarten math and literacy, we especially recommend the following works:

"Early Childhood Mathematics: Promoting Good Beginnings," a joint position statement of the National Council of Teachers of Mathematics (NCTM) and the National Association for the Education of Young Children (NAEYC) adopted in 2002 and updated in 2010. Available at https://www.naeyc.org/files/naeyc/file/positions/psmath.pdf

The Young Child and Mathematics, Juanita V. Copley, NAEYC, 2nd edition, 2010. Chapter one is available on-line at http://www.naeyc.org/store/files/store/TOC/167.pdf

"Early Literacy Development," Bank Street College of Education. An on-line handbook at http://bankstreet.edu/literacy-guide/early-literacy-development/emergent-readers-and-writers/

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

Teaching Math in Kindergarten

In recent years there has been a growing awareness that a foundation for mathematics needs to be laid during preschool and kindergarten. Fortunately, young children are eager to explore math concepts and numbers but in ways that match their developmental understanding. They do not enter kindergarten as a blank slate but have amassed an intuitive grasp of math from the lives they live.

Math is embedded in every aspect of children's lives. Kindergarten classes form lines to go outside, and they form circles for stories and songs. Children encounter geometric forms in every day life from the triangle of a pizza slice, to the circular form of balls or the rectangles of books. Children are enthusiastic about counting songs and rhymes and sorting different materials and organizing them from smallest to largest and vice versa. There are a host of math-related activities that intrigue them and lay a foundation for a lifetime enjoyment of math and a proficiency in it.

Young children are known for their fantasy-rich, creative thinking, but at the same time they are also developing logical, mathematical thinking. This should not be directly "taught" but its development is supported through orderly well-organized environments, regular schedules, and engagement in repetitive activities such as setting the table in consistent ways each day. Teachers support children's growing interest in math by providing life experiences rich in numbers and math concepts and by helping children build and expand their knowledge base.

In the joint statement of NAEYC and NCTM, mentioned above, the early steps of mathematical knowledge and the pathways to learning in early childhood are described this way:

> A positive attitude toward mathematics and a strong foundation for mathematics learning begin in early childhood. These good beginnings reflect all the characteristics of good early childhood education: deep understanding of children's development and learning; a strong community of teachers, families, and children; research-based knowledge of early childhood curriculum and teaching practices; continuous assessment in the service of children's learning; and an abiding respect for young children's families, cultures, and communities.[vii]

Kindergarten children are eager to explore math concepts and numbers but in ways that match their developmental understanding. They do not enter kindergarten as a blank slate but have amassed an intuitive grasp of math from the lives they live. Setting arbitrary levels of accomplishment and ignoring how math knowledge progresses may actually impede children's mastery of basic math and their enjoyment of the subject.

A highly regarded book on mathematics and young children (ages 3 to 8) is Juanita Copley's *The Young Child and Mathematics.* In it she gives many examples of how to present mathematics to young children and how children respond to math. She shows how kindergarten children develop a sense for math through life experiences rather than through abstract lessons. Her points include the following:

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

1. The operations of addition, subtraction, multiplication, and division are often understood by young children. While they may not be able to complete a written equation such as 5 – 2 = 3, they can easily tell you how many buttons you would have on your shirt if you started with 5 and 2 fell off.
2. Children's understanding of rational numbers, while incomplete, is often more accomplished than expected. Their common sharing experiences, their use of the term half, and their fair distribution of quantities among friends are natural by-products of everyday experiences.
3. The development of geometric concepts and spatial sense can often be observed when young children participate in free play.
4. A natural fascination with large numbers is evident with young children. While they frequently invent nonsensical numbers (a million-dillion-killion), they often show a partial understanding of quantity and the need for counting.

Juanita Copley goes on to say:

> Do we need to directly teach young children arithmetic? Do we need to start from the beginning, drill in those basic facts, and fill all the holes in their understanding? Do we need to tightly define as developmentally appropriate only very easy mathematical concepts? The answer to all of these questions is a resounding No!
>
> Instead, we need to remember that young children possess a vast amount of intuitive, informal mathematical knowledge. Our job is to assess their prior knowledge, build upon their strengths, facilitate their learning, and enjoy the process.[viii]

Teaching Literacy in Kindergarten

There are many aspects of literacy that are appropriate for kindergarten children, such as developing strong oral language, familiarity with books, and recognition of some letters and words. Children at this age are becoming familiar with the meaning and consistency of print. But for years kindergarten standards have called for much higher levels of reading and writing, commensurate with previous first grade expectations. A clear example is the expectation that kindergarten children should be able to read. Some can, some cannot, but under Common Core all are required to read basic books with "purpose and understanding." To accomplish this children need to know the entire alphabet, upper and lower case, another goal that was previously reserved for first grade.

During the past 20 years much time and money has been devoted to early reading instruction. If these approaches worked, we should see significant gains in reading levels by now. While there have been some gains for minority groups and those living in poverty, overall there has been very little progress in reading in this country. For example, between 1990 and 2013 fourth grade reading scores in the U.S.

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

rose by only 1%, and eighth grade by only 1.5%, according to NAEP test scores.[ix]

While children of poverty and from certain minority groups fare the worst, even Caucasian children and those not poor do not have an outstanding record in reading. Slightly less than half read at a "proficiency" level in fourth grade, which is a serious problem for the children and the country. Frequently the low levels of reading in the U.S. are blamed on not starting children early enough, and there is much pressure on preschools to increase reading skills among four-year-olds. However, there is grave concern among educators and health professionals that an accelerated approach in preschool will only frustrate children further and will not yield significant gains in reading.

The best guidelines we have seen for teaching reading in kindergarten come from Bank Street College in New York. Its handbook for reading tutors[x] states that most children in preschool, kindergarten, and even first grade, are "emergent readers," while most first and second graders are "early readers." The handbook describes the differences between the two and how to approach each level. We attach Bank Street's guidelines with a strong recommendation that they be used in developing goals and approaches for literacy development in kindergarten.

Bank Street Guidelines for Literacy Development[xi]

Emergent readers and writerss — Pre-kindergarten through first grade:

- understand that written language conveys messages
- pretend read and write: they turn pages of books, invent the story using pictures and their memory of a story
- begin to match spoken words with print (see Concepts about Print Link to Glossary of Terms)
- may know some letter names and some letter sound associations
- may recognize some words and letters in their environment or in texts; but not again in a different context; they may still be unsure of the concept of "word" or "letter"
- can write some letters, usually those in their own names
- in writing may reverse some letters, and may use mostly upper case letters
- may make scribbles or strings of random letters with no spaces; one letter may represent a whole word
- may read or attribute meaning to his or her marks; may not be able to "re-read" these marks at a later time.

Children in this phase benefit from:

- seeing reading and writing modeled through listening to good stories and seeing others write meaningful messages
- supported practice while reading engaging, predictable books with pictures that clearly relate to and illustrate the story line
- encouragement to experiment with writing

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

- experience with sorting words and pictures to build letter and sound recognition (see phonemic awareness Link to Glossary of Terms)
- experience with rhyming and other word play
- activities that engage students in using oral and written language

Early Readers and Writers — First grade through second grade:

- know that reading needs to make sense
- are more attentive to print and know more print conventions
- understand that books have exact and unchanging messages carried by print as well as pictures
- can identify most letters by name, and can use some letter/sound knowledge (i.e.: the sound of the first letter) to help figure out words.
- know the meaning of some punctuation (capitals and periods), but may not use consistently in writing and reading
- can recognize, by sight, a small but growing store of words in different contexts
- use pictures, story patterns, context and memory of some Link to Glossary of Termswords as well as some phonics to make sense of print

Early Writers:

- use spaces between words, but not consistently
- include more sound/letter associations in spelling, especially initial or final consonants; may write some whole words or word parts (like "ing") from memory
- can usually re-read his or her own writing
- have variable handwriting: may use more lower case letters, but still could be mixed with caps, may reverse some letters (writing b instead of d)

Children in this phase benefit from:

- continued exposure to shared and guided reading of pattern stories and other predictable books, with clear print and pictures
- modeling and explicit teaching of and practice with using threeLink to Glossary of Terms cuing systems and strategies to figure out words and make sense of print
- games, activities to consolidate voice/print match and build sight word recognition Link to Glossary of Terms
- games and activities to build phonemic awareness Link to Glossary of Terms
- encouragement to write using invented spelling Link to Glossary of Terms
- language experience activities Link to Glossary of Terms
- hearing, discussing, retelling a variety of stories read aloud

NOTE: Keep in mind that the grade levels associated with each phase described here are only approximate. In each grade there are likely to be children in all phases of literacy acquisition. Also, remember that within each phase there may be a range of learners who are developing in different ways.

Alliance for Childhood Guidelines for Well-balanced Kindergartens Continued

i Audrey Breen, "U.Va. Researchers Find that Kindergarten Is the New First Grade," January 29, 2014. This press release describes a working paper titled "Is Kindergarten the New First Grade? The Changing Nature of Kindergarten in the Age of Accountability," by Daphna Bassok and Anna Rore. https://news.virginia.edu/content/uva-researchers-find-kindergarten-new-first-grade-h

ii "Gesell Institute Announces Release of Technical Report on Two-Year Study of Young Children," Press release, July 6, 2012. http://www.gesellinstitute.org.php53-10.dfw1-2.websitetestlink.com/wp-content/uploads/2013/05/Tech-Report-Press-Release-.pdf

iii Linda Darling-Hammond and Jon Snyder, "Curriculum Studies and the Traditions of Inquiry: The Scientific Tradition" in the *Handbook of Research on Curriculum* (1992), edited by Philip W. Jackson; New York: MacMillan, pp. 41-78.

iv Christopher J. Lonigan and Beth M. Phillips, "Understanding the Contributions of Early Academic Skills to Children's Success in School" in *Contemporary Debates in Childhood Education and* Development, edited by Sebastian Suggate and Elaine Reese; New York: Routledge, p. 154.

v Edward Miller and Joan Almon, *Crisis in the Kindergarten: Why children need to play in school,* Alliance for Childhood, College Park, MD: 2009. pp. 27–28.

vi The National Council of Teachers of Mathematics (NCTM) and the National Association for the Education of Young Children (NAEYC), "Early Childhood Mathematics: Promoting Good Beginnings," a joint position statement adopted in 2002 and updated in 2010. p. 8.

https://www.naeyc.org/files/naeyc/file/positions/psmath.pdf

vii NCTM and NAEYC, op cit, p. 13.

Sandra Stotsky's Review Comments

Comments for South Carolina
Sandra Stotsky, October 26, 2014

1. Quality of the standards: Overall poor. Too many begin with non-assessable and non-teachable words like "employ", "use strategies to," "value," "expand," "explore," "deepen," "ask," "focus," "broaden," "transact," "engage in," "develop," "acknowledge," "apply (unless followed by a specific thing)," "communicate," "adjust," "create," and many others. These are not standards.

2. Overall structure is from Common Core.

3. I could only look at "standards" up to grade 4. Where are the rest?

Jane, Part of the problem in looking at this endless sea of words (mostly filler) is in what was done by the DoE staff (below):

"We created a chart for the teachers containing (1) the current standards (Common Core); (2) the standards we had in place before Common Core; and (3) standards from several states that have approved college- and career-ready standards that are not Common Core. We then removed any identifying information from the chart, so the teachers would not know what standards were Common Core, to prevent the simple reuse of Common Core with a new name. "

The staff asserts that it used "college-and-career-ready standards that are not Common Core" but the point I made at the meeting in SC was that these are still CC standards even if these states (like Indiana, Florida, Pennsylvania, Alaska) have pretended that have their own state standards now. This is part of a deceptive game that is being played on unsuspecting legislators. I pointed out quite explicitly that Texas, and other states that were highly rated before Common Core (like CA and MA) were the standards to use. The staff if clearly trying to give SC back Common Core by deception. Perhaps TX standards were referred to. But the entire structure is Common Core's and the whole mess needs to be rejected by the legislature.

The second major problem is that this mess of words is excessive and overkill. Teachers cannot possible read through and grasp what is going on. All that is needed is a short list of proposed standards, grade by grade. It should not be longer than 12 pages. The staff must be ordered to present a 12-page list of K-12 standards for ELA, one page per grade level.

Sandra

Sandra Stotsky's Review Comments Continued

Sheri Few

From: Sandra Stotsky [redacted]>
Sent: Friday, November 21, 2014 5:58 PM
To: slfew@bellsouth.net
Subject: Re: SC ELA Standards

Of course. Use my list of non-assessable verbs.

-----Original Message-----
From: Sheri Few <slfew@bellsouth.net>
To: 'Sandra Stotsky' [redacted]>
Sent: Fri, Nov 21, 2014 5:30 pm
Subject: RE: SC ELA Standards

Thank you for your assessment and frank comments. Will it be alright for us to quote you?

Sheri

From: Sandra Stotsky [mailto:[redacted]]
Sent: Friday, November 21, 2014 11:31 AM
To: slfew@bellsouth.net
Subject: Re: SC ELA Standards

Sheri,
I've looked at the rest of the "standards" and they are just as inadequate and as non-assessable as the early-grade "standards are. Here is a typical example from grade 9:

"2. Extend and deepen understanding of content through purposeful, authentic, real-world tasks to show understanding and integration of content within and across disciplines."

This is a muddy statement that means almost nothing. Use my earlier statements to apply to the whole set. The revision committee and the SC DoE should be asked to come up with a short list of assessable and understandable (and authentic) standards.

The old SC ELA standards were far superior to Common Core's ELA standards and to these; they also pointed to authentic content. These "standards" do not. They are even worse than Common Core's standards.
Sandra

-----Original Message-----
From: Sheri Few <slfew@bellsouth.net>
To: 'Sandra Stotsky' [redacted]>
Sent: Fri, Nov 21, 2014 11:11 am
Subject: SC ELA Standards

Hi Professor Stotsky. I pray this email finds you well and blessed.

Jane sent me your initial comments on the new ELA Standards and I noticed that you weren't sent grades 5-12. I have attached the entire set and I would appreciate your review and commentary.

We are writing a report based on the analyses of experts and our own review.

Thank you in advance for your help with this and for all you do across the country to end Common Core.

Sheri Few, President

James Milgram's Review Comments

From: **Jim Milgram**
Date: Sat, Oct 25, 2014 at 2:01 PM
Subject: Re: Fwd: Draft Math Standards Attached

They are not, exactly, deficient. What they are is blindingly ignorant. The members of the writing committee were severely deficient in this area, and at least one actual math content expert -- NOT A "MATH EDUCATOR" WITH A DEGREE FROM AN ED SCHOOL -- is needed to go over the individual standards with a fine tooth comb and fix them. After that, the standards will still need a serious "pruning" as there are far too many of them, and they simply create the "mile wide and inch deep" situation that Common Core was supposed to avoid.

As it stands, the overall structure of the standards is not too different from that of Common Core. The SC standards just go much further, so there is no real reason why a CC aligned test would not work with them.

Jim

On Sat, Oct 25, 2014 at 11:53 AM, Jim Milgram <wrote:

THESE ARE MY COMMENTS ON A FEW OF THE STANDARDS IN THE SOUTH CAROLINA DRAFT STANDARDS THAT I WAS SENT BY JANE ROBBINS. OVERALL, THE OUTLINE OF THESE STANDARDS IS SIGNIFICANTLY SUPERIOR TO COMMON CORE. BUT THE DETAILS ARE FILLED WITH PROBLEMS, INCLUDING OUTRIGHT ERRORS, MISUNDERSTANDINGS, AND IMPROPER PREPARATION FOR THE INDIVIDUAL STANDARDS. ALSO IN TOO MANY PLACES THERE ARE FAR TOO MANY STANDARDS, AND MORE THAN A RELATIVELY SMALL PERCENTAGE CANNOT BE COVERED IN THE TIME ALLOTTED.

R. JAMES. MILGRAM

Here are a very few of the eighth grade standards that caught my eye as I quickly went through the document. Realistically, virtually all of the entire document needs to be gone through with a fine toothed comb by a real mathematician.

I've just sampled a few points, and they are far from the only points where there are either outright errors or stupidities.

8.F.4 (a)
(a) does NOT explain what "slope" is. What is a constant rate of change? The

James Milgram's Review Comments Continued

standard definition of slope is "rise over run", and then provide examples to interpret this.

8.F.4 (c)
(c) is so vague as to be meaningless. This is another point where examples are essential. Actually, one should insist on these changes as SLOPE is one of the absolutely most basic things one learns about in Algebra 1. (If the authors of this document are not capable of filling in the examples and focusing in on the key properties and applications of slope, then I would strongly suggest that you form new committee to fix things.

8.F.4 (d)
For (d) see my comments on (c) directly above.

8.F.5
Again, I have no idea what this standard is meant to mean. Frankly, I have my doubts about the knowledge of the subject shown by the authors, but, at a minimum, there have to be EXAMPLES to illustrate what this word salad is supposed to mean.

8.EE1.2 (b) (c)
Both (b) and (c) are essentially tautological. However, there is an issue here that is worth focusing on, which, of course, is not even mentioned in these standards. There are TWO real numbers that are the square roots of any squares, but there is only ONE real number that is the cube root of any real number! This distinction is important, and will later help support the learning of more advanced material in calculus and beyond.

A1.F.1 (a)
A1.F.1(a) is very sloppy. The critical property of a function is that "a set of pairs (a, b), where a runs over points of the domain and b runs over points of the range is a function if and only if both (a, b) and (a,c) are in the set then b=c." Students need to understand what this means and how to recognize when a relation is a function.

A1.F.1 (b)
All these terms need to be defined, and there should be some discussion of what their definitions are in the standards. Perhaps you will find that doing this right is going to take too much time from the more standard Alg. 1 topics, and you will narrow things down.

A1.F.1 (d)
You are kidding, right? What equation? There is no reason to assume there is any equation involved in the creation of a function. Of course, if you want to restrict the notion of a function to one that is defined by an equation

James Milgram's Review Comments Continued

(whatever that means), then you should say so.

Some comments on a few of the Algebra 1 standards. Virtually all of these standards need to be rewritten by people that actually know the subject, but here are some samples.

A1.F.1 (f)
This is the kind of standard that can mean almost anything, and without limiting examples, it is essentially meaningless. So I HOPE THE AUTHORS ARE CAPABLE OF PRODUCING APPROPRIATE EXAMPLES. (Not too many of the typical people involved in the specification of Standards are!)

A1.F.2
What do "scales" have to do with anything? If you have something in mind here, it is ESSENTIAL that you produce sample problems to show what you mean.

A1.F.2 (a)
As things stand, this standard makes absolutely no sense. What in the world is "a qualitative analysis of the graph?" When I read something like this I am tempted to believe that the author is simply stringing words together without any real idea of what that want to do.

Some comments on the Algebra 2 standards. Again, virtually all of the Algebra 2 standards need to be rewritten by people that actually know the subject.

A2.NQ.1 (a)
This standard is about as unclear as they come. "understand that quantities are numbers with units." Quantities are amounts of something, to be sure, but it's unclear how "units" come in. Usually, on talks numbers with units attached, such as miles per hour, or cubic feet per second, and that's already hard enough for students. Why make their lives even worse?

A2.NQ.1 (d) talks about "level of accuracy for the given context." This is very legitimate, but Algebra 2 is not the place to be doing it. Rather it should be done in a course such as chemistry or physics where the context is very relevant.

A2.NQ.2 (a)
In (a), perhaps the most crucial thing is the existence and properties of the conjugate of a complex number (if the number is a + bi then the conjugate is a - bi, and we have that (a + bi)(a - bi) = a^2 + b^2, so it is always non-negative. Moreover, it is non-zero unless both a and b are zero.)

A2.F.1

James Milgram's Review Comments Continued

What on earth is "the average rate of change over a specified interval" and why should one care? If you are going to have a standard like this you need to fill in such details. In general, one talks about the slope of a line segment joining two points on the graph that are "very close" to a specified point, and discusses what it might mean to take the limit of such slopes as the two points get closer and closer to the fixed point. One then studies explicit examples (trivial for linear functions, but not nearly so trivial for quadratic functions). But one has to think very carefully about whether this is such a good idea in Algebra 2. I would think it would be much more sensible in a pre-calculus course.

A2.F.2
A2.F.2 is another example of word salad. I can't make any sense of it as it's written. So I'd have to know what the authors actually had in mind. Then maybe someone could translate into standard English.

A2.F.3 (a)
This is completely incorrect as stated. The key issue as that most functions don't have an "inverse function" that is actually A FUNCTION. What these "inverse functions" really are is RELATIONS, not functions, and this cannot be lost sight of as ignoring it will just make an already confusing situation much worse.

Frankly, I think this entire area is not really appropriate for high school math. First, it is too formal and too general. It's something that someone who has lost sight of THE UTILITY of mathematics might force on students, but hardly anything that helps students to learn the things they really need to know.

A2.F.3 (c)
See my previous objections. If the authors really think this is something that students need to learn, then they should, at a minimum, focus on the key issue of recognizing when a function actually has an inverse function, and this isn't even mentioned.

A2.F.3 (d)
Finally, here we come to the heart of this topic, and it occurs at the very end as an afterthought. It should have been the emphasis topic. Then one could finally do what is actually important, constructing specific inverse functions such as arctan and arccos, determining the domain in which they exist and understanding why they can't be extended to a large domain. Equally important would be the log function as (sort of) inverse function to the exponential function. These are the topics that should be focused on here, not the excessively general discussion that, in fact, is present.

James Milgram's Review Comments Continued

A2.F.4
Here we go again. Note that the three parts of this standard are all entirely formal. There is no indication of any examples or any reason why one should know anything about composing two functions. Moreover, the most natural place for this topic is in studying transformations of the plane in geometry, where, for example, the composition of two reflections with their fixed lines non-parallel, is a rotation, not in Algebra 2.

A2.P.3
This is a very important standard, but it should really be done in an earlier algebra course, as was the case for at least the hundred years till about 1980. So here is an explicit example of the degree to which the course has been dumbed down in recent years. How can we possibly think about having our students compete on an equal playing field with students coming from the high achieving countries

A2.R.1
The key thing students need to learn about rational functions at this point is that a function like 1/((x-2)(x-3)) can be written in the form a/(x-2) + b/(x-3) (partial fraction decomposition) as this, first allows students to graph such functions and understand what the details of the graph signify, and second, prepares them for a crucial part of calculus and differential equations that is absolutely essential for any student wanting to major in any technical area in college.

But, as usual, the only things that are mentioned here are purely formal properties, with the usual expected result that students will ask why they are supposed to learn it and forget about them as soon as possible.

Geometry.

These standards are all over the place. For example, immediately after what was, traditionally, the beginning of the geometry course -- the study of ruler and compass constructions, there is a huge and very complex set of standards talking about transformations, of widely differing levels. For example G.CTC.2(e) is a standard that virtually no high school math teacher can handle. And G.CTC.2(f) is even worse.

On the other hand G.CTC.2 (a) is typically the content of seventh grade geometry, (see the standards in Common Core), and (b) is simply a waste of time, having very little to do with mathematics.

In G.CTC.3, out of the blue, with no preparation, the students are asked to use slopes to determine whether lines are parallel or perpendicular. But as stated there is absolutely no requirement that the conditions for parallelism or perpendicularity are not expected to be demonstrated. (Indeed,

James Milgram's Review Comments Continued

the proofs are pretty advanced, and probably need to be prepared for in Algebra 2.) But if you don't include proofs, then students will simply treat the conditions as things to be memorized for the test, and then forgotten as soon as possible. On the other hand, the process of proof opens the doors for real understanding of the subject.

Then we get to G.RP.1. This starts with the grandiose statement "Understand the axiomatic structure of geometry." Good luck with that. It took well over 200 years for mathematicians to fully understand the strengths and limitations of this method, concluding with Paul Cohen's analysis of the continuum hypothesis in the 1960's. Moreover, in point of fact, I doubt that there is more than one high school math teacher out of 500 who actually knows enough about this topic to do a decent job of teaching it, at a level that high school students would actually understand.

Then, after this not so auspicious start, the standards just go on and on and on, including far more than could be handled in any one year course.

This sequence must be entirely rethought and revised.

Ze'ev Wurman's Review Comments

Ze'ev Wurman
Date: Tue, Nov 4, 2014 at 2:25 AM
Subject: Re: Fwd: Draft Math Standards Attached

I apologize for the late input.

First, a summary.

In K-5 and 6-8, the SC draft is, indeed, very much based on the Common Core. Sometimes the language is changed, rarely improving the original, and frequently actually even perverting the CC original and creating less-clear and sometimes completely incomprehensible standards.

As part of the changes, some important things have been dropped, such as requiring mastery with the standard algorithm for addition and subtraction in grade 4, or multiplication of whole number using the standard algorithms in grade 5. In grade six the Common Core capstone standards for decimals and for dividing integers are present, yet the original clear demand for "using **the** standard algorithm" has been changed to "using **a** standard algorithmic approach," which means any odd algorithm, be it the awkward "partial sums" or the Everyday Math's "lattice method" will do. Not to mention the unnecessary awkward wording.

Further, little has been added in K-8, while essentially most of Common Core has been retained. So there is an early and unnecessary focus on 3D shapes, there is the delayed learning about area of triangles (grade 6) or the sum of their angles (grade 8) or circles (grade 7). And everything, overall, is as fast as common core, which is to say not very fast -- this draft will not lead to many kids taking early Algebra 1.

In the high school the situation is a bit better. While many CC idiosyncrasies remain -- the excessive focus in Algebra 1 on functions is the most prominent, but there are a few others as well -- most of the content is in place. Still, topic like sum of arithmetic (finite) and geometric (finite and infinite) sequences, and quadratic inequalities seems to have been forgotten, mathematical induction is absent, Conic Sections that typically belong in Algebra 2 were pushed into pre-Calc, and the Calculus standards are rather skimpy. Still, more trigonometry and geometry content than in Common Core is in place, which is a good thing even as the language is often poor.

Finally, I will point out to two generic issues.

(a) First are the "process standards" -- if they could be pushed to the BACK of the standards it would help. Common Core did not do that, and the result is that most teachers (and test makers) focus on them rather than focus on the content itself. Pushing them to the back would help a bit.

(b) Second, these are supposed to be CONTENT standards, while instructional practices are supposed to be left to local schools and teachers. Yet these standards sometime use the word "DISCOVER" which is defined as (p. 24) "**The word discover in a standard indicates that students will be given the opportunity to determine a formula through the use of manipulatives or inquiry-based activities.**" In other words, the standards directly and explicitly

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dictate pedagogy -- not a good idea, and perhaps even unconstitutional in South Carolina if LEAs are supposed to be in charge of curriculum. This is in addition to a lot of Common Core verbiage dictating various "strategies" or using "visual fraction models" that the draft carried-in unchanged.

Bottom line, K-8 is essentially badly re-written Common Core with a few minor and inconsequential changes. 9-12 is augmented and almost-decent set of standards that is in a need of serious language cleanup for clarity.

Now to some specific examples of issues. This is NOT an exhaustive review, but rather examples of problems and issues.

Process Standards (p. 6-7)

4.b Interpret mathematical models in the context of the situation.
Presumably this means in the context of the "original problem" rather than some undefined "situation." This ill-defined use of "situation" is quite prevalent throughout these standards.

6.a Determine when an approximation, an estimation, or an exact answer is most appropriate.
I cannot see the difference between approximation and estimation, yet the standard implies there is a difference.

6.b Specify units of measure according to the context of the situation.
Again, the pernicious and undefined "situation." How about "problem" instead? Further, I would nor use "according" but rather "appropriate."

7.a Recognize complex objects as being composed of more than one simple object.
This is a rather poor choice of words. Complex objects may be composed of simpler objects, yet those simpler objects do not need to be "simple" themselves. Further, "one or more" is confusing as it is unclear whether it refers to more than one type of object, or to more than one instance of possibly the same type, or both. Why not simply something like "*Recognize when complex objects are composed of simpler ones*"?

In general, the process standards are poorly written and are sometimes duplicative such as 2.b, 2.c, 2.d, 4.a and 4.b -- all of them essentially say the exact same thing.
2.b Describe a given situation using mathematical representations.
2.c Translate between mathematical representations and their meanings.
2.d Connect the meaning of mathematical operations to the context of a given situation.
4.a Identify relevant quantities and develop a model to describe their relationships.
4.b Interpret mathematical models in the context of the situation.

South Carolina Portrait of a College- and Career-Ready Mathematics Student (p.8)

This section is probably not very important, yet one wonders what exactly is "interdependent thinking" or whether that truly is what South California students should exhibit, or what is its connection to mathematics. I assume South Carolina doesn't want to raise students that will join

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the Borg.

Interdependent Thinking and Collaborative Spirit: Student collaborates effectively with others and respectfully critiques varied perspectives.

Similarly, one wonders what "**Self-Reliance and Autonomy**" or "**Effective Communication**" have to do with a student who is **mathematically** ready for college.

This whole page doesn't really belong to mathematics standards.

K-5 Standards

K.NS.1 Count forward by ones to 100.
1.NSBT.1a. count to 120, starting at any number within 120
2.NSBT.2 Count within 1000 by 2s, 5s, 10s, and 100s beginning with 0.

These three minor standards are a hallmark of trying to blindly follow in Common Core footsteps. Most state standards expected students to count to 20-30 in Kindergarten, 100 in the first grade, and 1000 in the second grade. Common Core, for some strange reason, decided to "push" Kinders to count to 100. Yet it didn't truly expect to accelerate facility with large number so it left grade 2 at 1000, like state standards always did. Then it found itself in a bind -- what would first graders be expected to do? So Common Core pulled "120" out of the blue, and stuck it there. Why not 127? Why not 144? Only God and CC writers know. Yet this baseless choice of 100/120/1000 became the hallmark of blind following of Common Core rather than the more natural (and more reasonable, truly -- no other standard in K deals with number over 20, and no other standard in grade 1 deals with numbers over 100) 20/100/1000. South Carolina seems proudly to follow in Common Core's mindless steps.

K.ATO.3 Compose and decompose numbers up to 10 using objects, drawings, and equations.
Equations (symbolic sentences) should not be expected in Kindergrten.

K.G.5 Model two-dimensional shapes using multiple representations.
The intent of this standard is unclear. What multiple representations? Presumably neither equations nor coordinate space. If a standard is not obvious to me, it certainly won't be obvious to parents or teachers.

1.NSBT.7 Decompose two-digit numbers in multiple ways and record the decomposition in expanded form and as an equation.
Which "multiple ways"? Isn't the "expanded form" and "equation" one and the same? Why not simply say "*Decompose two-digit numbers into expanded form*" or even simpler, "*write two-digit numbers in expanded form*"? Everyone would understand that.

2.NSBT.1 Understand place value within 1,000 by demonstrating that:
c. three-digit numbers can be decomposed in multiple ways.
Like in the previous case, it is unclear what the "multiple ways" means here, particularly that grade 2 already has a standard (2.NSBT.3) that says "Read, write and represent numbers to 1000

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using ... expanded form."

1.MDA.2 Use nonstandard physical models to show the length of an object as the number of same size units of length.
"nonstandard physical models" is meaningless gibberish.

2.NSBT.5 Add and subtract fluently within 100.
2.ATO.2 Demonstrate fluency with basic addition facts and related subtraction facts within 20.
The first standard already expects fluent addition and subtraction up to 100. What is the meaning of the second standard expecting fluent addition and subtraction to 20?

2.G.3 Identify two-dimensional regular and irregular shapes as polygons and non-polygons.
It is unclear what precisely this standard has in mind. Perhaps some examples might illustrate it, but examples are notably missing from all these standards. Are non-convex polygons included? Are self-crossing polygons expected?

2.MDA.4 Measure to determine how much longer one object is than another, using standard length units.
Presumably what was meant is "standard units of length (e.g., cm., m.)"

3.NF.1 Develop an understanding of fractions as numbers.
b. A fraction a/b is the quantity formed by a parts of size 1/b;
c. Represent a fraction on a number line based on counts of a unit fraction.
(c) seems correct yet is almost incomprehensible. Why not simply "*Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0*"? This is lifted directly from Common Core, but at least it is well written. If one steals, at least one should steal intelligently.

3.NF.2 Explain fraction equivalence by demonstrating an understanding that:
a. two fractions are equal if they are the same size, <u>based on the same whole</u>, or at the same point on a number line;
Based on (a), this standard implies that 7/1 equals 11/1, or 3/1 equals 27/1. All of them "are based on the same whole," the unit "1."

3.NF.2 Explain fraction equivalence by demonstrating an understanding that:
b. fraction equivalence can be represented using set, <u>area, and linear models;</u>
Perhaps what was meant was "area models" and "number line." Perhaps not. I am not clairvoyant. I am not even sure what was meant by "set."

3.G.1 Understand that shapes in different categories may share attributes but the shared attributes can define a larger category.
Reading this on its own is so abstruse as to be meaningless. At least Common Core (3.G.1) offered examples clarifying what is meant.

3.G.4 Identify a 3-dimensional shape based on a given 2-dimensional net and explain the reasoning.

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Probably overly demanding for 3rd grade.

4.NSBT.4 Add and subtract multi-digit whole numbers.
As compared even to the Common Core, it misses "Fluently" in the beginning and "using the standard algorithm" at the end.

4.NF.2 Compare two given fractions with different numerators and different denominators using a variety of methods, and represent the comparison using the symbols <,>,=.
The lack of specificity as to the "variety of methods" makes this standard unhelpful. Even Common Core (4.NF.2) is much clearer.

4.NSBT.1 Understand that, in a multi-digit whole number, a digit represents ten times what it would represent in the place to its right.
5.NSBT.1 Understand in a multi-digit whole number, a digit in one place represents 10 times what it represents in the place to its right, and represents 1/10 times what it represents in the place to its left.
5.NSBT.7 Understand in a multi-digit whole number, a digit in one place represents 10 times what it represents in the place to its right, and represents 1/10 times what it represents in the place to its left.
The idea that a student will learn in one year that the digit to the left is x10, while he will have to wait a year too learn that the digit to the right is 1/10 seems somewhat undemanding, to put it mildly. Repeating it twice a year later seems Freudian.

5.NSBT.x 5. Fluently multiply multi-digit whole numbers using the standard algorithm.
This is a **missing** standard, clearly forgotten when carrying from Common Core.

5.MDA.3 Understand the concept of volume measurement.
a. Recognize volume as an attribute of right rectangular prisms;
Grade 3 (3.MDA.2) and grade 4 (4.MDA.2) already dealt with volume, so clearly the concept of volume is now familiar. The way the standard is written implies that volume being an attribute of right rectangular prism is, in some sense, unique. This is confusing and misleading. Ideally, simply delete this redundant standard. Alternately, at least use something like "*recognize volume as an attribute of any three-dimensional shape.*"

6.NS.2 Fluently compute the division of multi-digit whole numbers using a standard algorithmic approach.
6.NS.3 Fluently compute the addition, subtraction, multiplication, and division of multi-digit decimal numbers using a standard algorithmic approach.
Change to "the standard algorithm(s)." As it is now, it allows for any and every invented algorithm to be used, whether efficient or not.

6.GM.1 Solve real-world and mathematical problems involving area of polygons.
a. Compute the area of right triangles by composing two triangles into a rectangle.
b. Compute the area of other triangles by composing two triangles into a parallelogram.
c. Compute the area of special quadrilaterals and polygons by decomposing these figures into triangles and rectangles.

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Regarding (b) and (c), is there anywhere in these standards where students learn to calculate the area of an arbitrary triangle? This is typically done in grade 5, and I couldn't find it anywhere. Without this knowledge, this standard can't be taught. Regarding (b), these standards do not expect students to learn how to calculate an area of parallelogram until high school geometry.

7.NS.e Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.
Makes little mathematical sense. How can some of these properties (e.g., distributive or inverse) assist in adding or subtracting rational numbers? Sloppy.

7.NS.3 Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
Awkward language. "The concepts of all four operations"? Really? At least the Common Core languages is relatively clean: "*Solve real-world and mathematical problems involving the four operations with rational numbers.*"

7.GM.2 Construct triangles and other geometric figures.
a. Construct triangles given all measurements of either angles or sides.
b. Decide if the measurements determine a unique triangle or no triangle.
c. Construct other geometric figures given specific parameters about angles or sides.
Awful language. Regarding (b), it doesn't leave an option for multiple triangles. Regarding (c) what exactly are "parameters about angles or sides"? Gibberish.

8.GM1-8.GM.4 Introduce rigid transformations as the basis for recognizing and proving triangle congruence and similarity.
This is one of the most prominent experimental features of Common Core that has a no track record of success, and it has been inserted wholesale into this draft.

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The examples above are just that -- examples of bad language and bad mathematics. There are many more examples of this in the K-8 section of the draft.

High School Standards

The high school standards are -- in general -- significantly better than the K-8 standards. Most of the required mathematics content seems to be there, with the notable exception of rather poorly defined Calculus standards. In amny cases the language needs some clean up too.

Regarding Algebra 1, the content seems relatively heavy and would benefit from trimming some of the function-theory and exponential functions standards (move to Alg. 2)

Algebra 2 misses conic sections (they are placed in pre-calc instead) and sums of series, both arithmetic and geometric. Quadratic inequalities are missing from either Algebra 1 or Algebra 2.

Algebra 2 or pre-calc also miss mathematical induction.

Endnotes

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19 Ibid.

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South Carolina

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998 Guion Drive • Lugoff, SC 29078

scpie.org