

The North Carolina Academic Standards Review Commission

Report of Findings and Recommendations

December 18, 2015

DRAFT

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Academic Standards Review Commission
Department of Administration

December 18, 2015

TO THE MEMBERS OF THE NORTH CAROLINA STATE BOARD OF EDUCATION:

Attached for your consideration is the report to the 2016 Session of the 2015 General Assembly. This report was prepared by the Academic Standards Review Commission, pursuant to Senate Bill 812, Session Law 2014-78.

Ms. Tammy J. Covil
Co-Chair

Mr. Andre Peek
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Co-Chairs
Academic Standards Review Commission

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**ACADEMIC STANDARDS REVIEW COMMISSION
MEMBERSHIP**

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PART I. EXECUTIVE SUMMARY

Under the authority of the North Carolina General Assembly, the Academic Standards Review Commission (ASRC) hereby presents its findings and recommendations pursuant to a review of the North Carolina Standard Course of Study for English Language Arts (ELA) and Mathematics. In 2010, the State Board of Education (SBE) adopted the Common Core State Standards (CCSS) as the model by which school districts and schools are currently required to plan, implement, and monitor K-12 instruction. This report contains an overview of the review process, summarized findings, subject-area recommendations, and an expanded discussion of ELA and mathematics findings. In-depth reports and supporting data are located in the appendix section of the report.

Since September 2014, the ASRC has engaged in a review process guided by criteria outlined in Section 2. (c) of Senate Bill 812, which include the following:

- (1) Conduct a comprehensive review of all English Language Arts and Mathematics standards that were adopted by the State Board of Education under G.S. 115C-12(9c) and propose modifications to ensure that those standards meet all of the following criteria:
 - a. increase students' level of academic achievement;
 - b. meet and reflect North Carolina's priorities;
 - c. are age-level and developmentally appropriate;
 - d. are understandable to parents and teachers; and
 - e. are among the highest standards in the nation.
- (2) Recommend changes and modifications to these academic standards to the State Board of Education, as soon as practicable upon convening and at any time prior to termination.

(3) Recommend to the State Board of Education assessments aligned to proposed changes and modifications that would also reduce the number of high-stakes assessments administered to public schools.

(4) Consider the impact on educators, including the need for professional development, when making any of the recommendations required in this section.

In summary, knowing the effects of standards implementation and the implications for teachers, students, and parents is the purpose of this study.

Review Methodology

Mainly coordinated by two subcommittees (ELA and Mathematics), the Commission completed its mission in several phases. Both committees examined the literature on educational standards; reviewed the standards of selected states; collaborated with expert panelists; designed several survey tools; facilitated four regional meetings with classroom teachers; analyzed multiple data sources; and composed preliminary and final reports.

Review Criteria

In order to establish a reliable approach for conducting the review process, the ELA Subcommittee agreed on four factors: 1) clarity and focus; 2) implications for instruction; 3) age-appropriate practices; and 4) implementation and sustainability. The Mathematics Subcommittee identified seven areas of concern: 1) poorly worded standards; 2) insufficient textbooks, resulting in parent frustrations; 3) inflexible teaching methods; 4) excessive topics; 5) age-inappropriate

expectations; 6) over-emphasis on models as opposed to algorithms; and 7) inefficient conversion to instruction.

ELA and Math Surveys

Early in the process, the ELA Subcommittee released a survey to which 1,736 North Carolina teachers completed Likert-scaled and open-ended items. In addition to the ASRC survey findings, the North Carolina Department of Public Instruction (NCDPI) shared the results of a survey in which approximately 100,000 ELAs participated. The Mathematics Subcommittee conducted surveys during the spring of 2015 and received 554 responses from K-8 math teachers.

Examining the Standards of other States and Countries

The ELA Subcommittee reviewed the standards adopted by Virginia, Texas, and California prior to the CCSS adoption in most states. Using the established review criteria, the ELA Subcommittee identified several strengths in these states' standards that are missing in the CCSS model. In addition to Virginia, Texas, and California, the Mathematics Subcommittee also reviewed the math standards endorsed by Nebraska, Minnesota, Singapore, and Finland. In reviewing the CCSS, both committees utilized feedback from released surveys and the testimonies of teachers who attended regional meetings.

In the fall of 2015, the ASRC hosted four regional meetings in which approximately 100 classroom teachers offered their insights on a range of instructional topics covering ELA and mathematics. The Commission conducted meetings in Moore, New Hanover, Richmond, and

Robeson counties. In summary, well over 2,000 teachers answered the Commission's call for feedback regarding the implementation of the CCSS in their districts and classrooms. Audio streaming and other technologies made it possible to involve participants located in remote sites around the state.

Expert Commentary

Experts in the fields of educational standards and childhood learning appeared before the Commission. Dr. Sandra Stotsky, Professor of Education Reform at the University of Arkansas, drew attention to the absence of specific content in the CCSS/ELA standards. Dr. James Milgram, Professor Emeritus of Mathematics at Stanford University, addressed the necessary role of content specialists in developing standards for mathematics. Ms. Carole Ardizzone, Education Chair of the Board of Brookstone School in Charlotte, offered important insights regarding developmental-appropriate practice.

Reviewing the Research

The Commission studied the literature on educational standards in order to establish a common understanding of high-quality standards. The seminal work of Bloom (1977) on levels of thinking and learning objectives and Miller's (2005) descriptions of standards categories helped the Commission identify the traits of quality standards. Miller noted that standards should contain minimal task expectations, well-defined attainment levels, and consistent terminology. In short, the research points to a few traits of high-quality education standards, including the following: 1) terminology consistency; 2) minimal task expectations; and 3) well-defined levels of attainment.

Alignment with National Committees and Associations

The ELA Subcommittee reviewed reports and white papers published by the National Association for the Education of Young Children (NAEYC), the leading voice of professionals in the field of early childhood. In addition to other sources of data, the work of the National Mathematics Advisory Panel (NMAP) informed the findings of the Mathematics Subcommittee. Composed of 17 highly credentialed experts from many fields and five ex-officio members, this panel's contributions to high school teaching and learning, as well as K-8 benchmarks, are essential for world-competitive mathematics instruction.

Review Limitations

The small collection of examples in this report is intended to explain specific points and/or assertions regarding particular standards. Gathering additional information should precede any steps that call for significant changes in the North Carolina Standard Course of Study, ELA and mathematics.

Summary of ELA Findings

The findings from survey analyses and regional meetings with ELA educators are the following:

1. The committee identified key traits of clarity and focus in other states' standards, namely Virginia (current adoption) and California (pre-CCSS). The strengths include guiding principles, theories of learning, and teaching scenarios grounded in research-based practices. These features help to create a cohesive framework. The CCSS do not contain similar features.
2. Numerous standards are task-intense, meaning that multiple learning expectations appear in the statements. Although said to be rigorous, standards of this kind often complicate teachers' efforts to bring standards, instruction, and testing into alignment. Furthermore, the inclusion of multiple learning expectations seems arbitrary, since it is difficult to discern an intentional sequence of tasks.
3. The ELA standards are poorly distributed across the grades.
4. Banded standards (e.g., grades 9-10) create confusion as to who is accountable for instructing and assessing the standards.
5. This review process lends credence to widespread concerns about developmental-appropriate practice and the CCSS.
6. Numerous survey responses highlight the frustrations of parents who want to help their students succeed, yet have no textbooks to clarify their own confusion and questions. In addition, parents are concerned about the absence of comprehensive writing instruction, including print and cursive.

7. Efforts to implement the CCSS have resulted in a poorly sustained ELA curriculum. A clear example is demonstrated in the lack of time available for systematic K-12 writing instruction.
8. English Language Arts teachers are primarily responsible for the informational text standards. Several teachers suggested that all teachers, regardless of content, share the responsibility for teaching informational text.
9. The desire of many high school teachers is that ELA standards return to a strong emphasis on rich, historical literature.
10. In general, teachers are pleased with the standards that require students to provide text-based evidence. Additionally, teachers are supportive of the ELA Writing standards. Nevertheless, nearly 80 percent (78.8 percent) of those who responded to the NC ELA Survey agree that revisions are needed and that teachers should play a role in the process. Based on feedback from approximately 100 teachers who participated in the four regional meetings, they would likely concur with a revision plan that amplifies the voices of teachers.

Summary of Mathematics Findings

The findings from survey analyses and regional meetings with math educators are the following:

1. North Carolina's K-8 mathematics standards are unclear and include numerous typos, errors, and mathematical mistakes.
2. The North Carolina K-8 mathematics standards specify that teachers frequently use models. However, as evidenced by numerous published examples and parent complaints, some teachers make computations with models into monstrously complex exercises that

parents and students cannot understand. In addition, these teachers require students to master these computations in contradiction to the NCDPI policy of letting students use any method they know.

3. The lack of textbooks in grades K-8 is a serious problem. In the ASRC survey of K-8 teachers, 60.4 percent noted that insufficient textbooks and related instructional materials hamper instruction and student performance.
4. Teachers do not understand the purpose of math standards that repeat across grades 9-12. The high school mathematics standards suffer due to repeated standards.
5. The high school mathematics standards lack “real world” problems, which is in contrast with the stress put on them in K-8.
6. Gaps are present in the high school mathematics standards. For example, students are asked to plot trigonometric functions and logarithms in Math I. However, trig functions are not completely defined until Math III. Due to these gaps, LEAs often specify what teachers do and do not teach. As a result, differences arise, and it becomes unclear whether or not there is a consistent set of state standards.
7. Geometry, the treatment of radicals, and factoring are slighted in the North Carolina high school mathematics standards. Logic, deductive reasoning, formal proof, and indirect proof have been eliminated except for a few simple exercises in triangle congruence, and little emphasis is given to basic typical multiplication and factoring patterns. Omitting these topics creates a gap in learning that students need for higher-level courses and college-level mathematics.

8. Probability and set theory are poorly done in the North Carolina high school mathematics standards. The standards do not address counting principles, and there is a paucity of information about compound events.

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PART II. DISCUSSION OF FINDINGS

English Language Arts and Mathematics

Introduction

For the past three decades, the standards movement in education has driven most national, state, and district-level policy decisions related to curriculum, instruction, and student assessment.

Currently hailed as a tool for equalizing educational opportunities, an educational standard has one basic function: to describe what a student is expected to know and demonstrate during a specified period of time.

Mueller (2014) categorizes standards on the basis of function and assessment efficiency, noting that content/subject-area standards are considered premium during the K-12 years and are efficient for standardized testing. In addition to content standards, a second category is known as process standards, or the standards that call for demonstrable proficiency in writing, listening, speaking, performing, reciting, and other performance areas. In North Carolina, the ELA standards encompass the process standards. Dispositional standards, the third category, describe the behaviors that educators and parents consider important as students mature intellectually, emotionally, socially, and ethically. Dispositional standards include the behavior norms and beliefs that shape students' values and decision-making orientations (Miller, 2005). The seminal research by Benjamin Bloom (1977) on domains of thinking, teaching, and learning is a precursor to the current enthusiasm for educational standards.

Ideally, the school mission statement serves as the foundation on which curricular goals, standards, and learning objectives are developed. These components come together and form

what is commonly known as a framework, or the structure that renders alignment and cohesion among and between the parts. Regardless of the category—content, process, or dispositional—the developers of education standards should adhere to a few important practices when describing the tasks students are expected to master. These practices include the following: 1) ensuring terminology consistency; 2) eliminating embedded tasks/expectations; and 3) defining a minimum mastery level.

Additionally, well-worded standards are traceable to the grade-level/content goals and verifiable in teacher observations, lesson plans, and assessments and tests. School districts that strive to improve teachers' understanding of educational standards will go far in building the self-confidence needed to meet the daunting challenge of implementation.

This report reviews North Carolina's current K-12 ELA and mathematics standards, and it offers findings and recommendations to improve these standards based on research, surveys, and focus groups. The recommendations within this report would clarify for teachers and parents the grade level topics (content) and the knowledge and skills to be mastered by students. They would also allow teachers flexibility and discretion in their choice of teaching methods.

English Language Arts Findings

The following findings are presented in four categories: 1) clarity and focus; 2) implications for instruction; 3) age-appropriate practices; and 4) implementation and sustainability.

Clarity and Focus

In her testimony, Dr. Sandra Stotsky described standards as “clear statements that don’t require interpreting or unpacking.” She continued her testimony by stating that North Carolina’s ELA standards essentially lack rich content, especially in the area of historical literary knowledge literature. Dr. Stotsky offered pertinent examples of content standards as presented in the 2004 Massachusetts ELA Standards, the version implemented prior to the adoption of the CCSS in 2011.

Because Massachusetts has always enjoyed a reputation of having outstanding standards, the ELA Subcommittee chose to examine the 2004 framework, the standards in use prior to the CCSS adoption. A noteworthy feature in the document is a section titled “Ten Guiding Principles,” which sets forth ten pillars of instruction. This information sets the stage for theory-to-practice instruction.

A useful instructional feature that once appeared in the Massachusetts standards is a typology of grade-level reading selections arranged in one of two categories: 1) Our Common Literary and Cultural Heritage; and 2) Contemporary American Literature. Additionally, the document contains practical resources ranging from pedagogical theories of ELA content to handy lists of teaching strategies. Exact wording removes any doubt about the instructional focus. In the

following examples, one can readily see the difference in the precision with which the standards are expressed in the 2004 standards framework versus the 2011 example.

2004

MA.5.6 C.21.4: Improve word choice by using dictionaries.

MA.5.6 C. 21.5: Use knowledge of correct mechanics (end marks, commas for series, capitalization), usage (subject and verb agreement in a simple sentence).

2011

CC.5. W.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or typing a new approach.

If the 2004 framework were in use today, a teacher in Massachusetts would have the benefit of handy resources containing grade-level scenarios that illustrate how to teach the standards.

The format in which the California State Standards (2008) are presented immediately draws in the reader. Beginning with a section titled “Content Standards and Instructional Practices,” the document provides the theoretical foundation followed by purpose-setting goals and task descriptions. The vocabulary standards contain a high level of detail, giving an approximate number of words students are expected to acquire at each grade level. While teachers and parents might appreciate having this level of detail, the Fordham Institute (2010) cautions against

number setting, since tracking attainment, as a variable of formal instruction, would require extraordinary effort on the part of the schools. In other words, a student's operational vocabulary stems from many factors, many of which are beyond the scope of schools and teachers.

The sub-parts of the standard are plainly presented. For example, sixth grade students are expected to compose a variety of writing samples containing 500-700 words. In grade 7, students are introduced to literature-response writing, summary development, and persuasive writing. Academic and research writing are introduced in grades 9-12, as students study the informational/functional writing mode. The straightforward writing adds to the quality of the standards, as evidenced in the next standard.

- 1.2 Create multiple-paragraph compositions.
 - a. Provide an introductory paragraph.
 - b. Establish a central idea with a topic sentence near the beginning of the first paragraph.
 - c. Include supporting paragraphs with simple facts, details, and explanations.
 - d. Conclude with a paragraph that summarizes the points.
 - e. Use correct indentation.

Using the 2008 California ELA Standards, a teacher today would know the indicators/signposts of effective readers and writers and benefit from guiding principles and theories of learning. The framework has all the features of an “on the spot” helpful resource for teachers.

The Virginia Standards of Learning (SOL) is the framework for organizing the K-12 curricula for public schools in the Commonwealth of Virginia. For each grade level, the document provides an overview of essential goals followed by the standards and detailed indicators. The SOL framework addresses grammar, usage, and mechanics through writing, so the guidelines for language are focused and explicit. A web portal makes it possible for teachers and parents to examine and download scored writing samples and to explore other resources that support the K-12 writing standards.

The reading standards are delineated, thus helping teachers develop well-aligned lessons and activities. Teachers are informed of the essential goal expectations, according to grade level, not grade bands, as in the CCSS framework for grades 9-10 and 11-12. Similar to the California standards, the SOLs are written such that a teacher could use the framework for daily planning. Below is a grade 3 reading standard.

Grade Three Standards of Learning (SOL)

3.6 The student will continue to read and demonstrate comprehension of nonfiction texts.

- a. Identify the author's purpose.
- b. Preview and use text features.
- c. Ask and answer questions about what is read.
- d. Draw conclusions based on text.
- e. Summarize major points found in nonfiction texts.
- f. Identify the main idea.
- g. Identify supporting details.

- h. Compare and contrast the characteristics of biographies and autobiographies.

Beginning in kindergarten, students receive direct instruction in writing. In grades 5 and 8, the state administers a writing assessment. At the high-school level, students take an end-of-course writing test. Detailed guidance for preparing students in writing is presented in helpful instructional blueprints. Reviewing these blueprints leads to one conclusion: educators in Virginia are serious about systematic writing instruction.

The Texas Essential Knowledge and Skills (TEKS) for English Language Arts appear in the Texas Education Code, Chapter 110. The administrative code specifies that schools shall instruct five strands of content: 1) reading; 2) writing; 3) research; 4) listening and speaking; and 5) oral and written conventions. Below is an excerpt taken from the Texas Codes §110.18. English Language Arts and Reading, Grade 6.

(b) Knowledge and skills

- (1) Students are expected to adjust fluency when reading aloud grade-level text.
- (2) Students understand new vocabulary and use it when reading and writing.
- (3) Students are expected to determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes.
- (4) Students use context to determine or clarify the meaning of unfamiliar or multiple meaning words.

The ELA standards present a clear progression from grade to grade. Similarly, the research standards present challenging expectations as students advance through the grades.

The North Carolina State Board of Education adopted the CCSS in 2010. Since adoption, school districts have experienced varying degrees of success implementing the standards. The ELA survey respondents who endorse the CCSS cite rigor in textual analysis and drawing inferences as important strengths. Teachers also value the instructional focus on explicit vocabulary study, which they agree is beneficial to disadvantaged students whose reading experiences are limited to the school day.

Several teachers who attended the Sandhills meetings stated, “Good standards are very clear cut and leave little room for interpretation.” The following CCSS reading standards provided by the Sandhills teachers are consistent with the general understanding of focus and clarity.

- RL.1.6: Identify who is telling the story at various points in a text.
- RL.2.4: Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.
- RL.4.2: Determine the theme of a story, drama, or poem from details in the text; summarize the text.

On the other hand, teachers cited several examples of problematic standards caused by imprecise expectations. The next two examples represent this criticism.

- RI.5.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively), as well as in words, to develop a coherent understanding of a topic or issue.

Widely known among North Carolina teachers as an “unpacking” document, this resource is intended to deepen teachers’ understanding of the written standards. While producing this resource is laudable, NCDPI should routinely evaluate the information, giving close attention to precise, concrete language. Ideally, the “unpacking” documents should be a teacher’s most reliable resource for interpreting the standards. In some instances, however, the “unpacking” documents contain ambiguous information.

Inconsistent use of terms detracts from the quality of the CCSS. An example is the random interplay between the terms, main idea, central idea, and theme, which are three terms frequently found in the Reading Literature standards. The use of inexact adjectives such as “short and sustained” instruction begs for clarification.

During the October regional meetings, the participants provided numerous examples of problem standards, which include the following sample. Reading standards RL.1.6 and RL.4.2 are reasonably clear; however, the use of “domain specific” in RI.5.4 is imprecise.

RL.1.6: Identify who is telling the story at various points in a text.

RL.4.2: Determine the theme of a story, drama, or poem from details in the text; summarize the text.

RI.5.4: Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.

Implications for Instruction

Implementing new standards requires teachers to invest infinite hours adjusting to many unknowns. The best depiction of the process is represented in classroom teachers doing heroic work as they pivot in new directions. Examples of these and other instructional challenges are present in the survey data compiled by the ELA Subcommittee. For example, tackling what seems to be an excessive number of standards is a widely shared concern of teachers. As a way to shed light on the number of standards per grade level, one teacher created and submitted the following table. It must be noted that no embedded standards are included in the table, meaning the “real” number could easily triple the instructional demands on teachers.

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Table 1: Common Core Standards by Grade Level							
Grade Levels	Literature	Informational Text	Foundational Skills	Writing	Speaking/ Listening	Language	Total
Kindergarten	10	10	17	7	8	21	73
Grade 1	10	10	19	7	9	27	82
Grade 2	10	10	11	7	9	25	72
Grade 3	10	10	9	21	10	31	91
Grade 4	9	10	6	25	10	26	86
Grade 5	9	10	6	25	10	24	84
Grade 6	9	10		28	10	22	79
Grade 7	9	10		28	10	19	76
Grade 8	9	10		28	10	21	78
Grades 9-10	9	10		28	10	18	75
Grades 11-12	9	10		28	10	17	74

The consequences of “too little time; too many standards” is raised by Schmoker (2011) in his recommendation to reduce the number of standards by one half, a suggestion that would align the CCSS menu of standards with practices adopted by high-achieving countries. Schmoker further stated that excessive standards result in teachers assigning endless worksheets, classroom resources marketed by large education publishing companies.

Excessive standards coupled with testing mandates restrict opportunities for students to read complete literary works or to compose full essays and extended reports. The writing of choice is little more than constructed responses. To support this point, several teachers in the Sandhills region noted their satisfaction with the CCSS writing standards, yet they also indicated having little time in the school day to provide systematic writing instruction. Essentially, daily instruction is becoming proportional to the tested curricula, as teachers prudently budget their time with testing in mind. An important variable in teacher accountability is what North Carolina educators know as Standard 6: a mathematical calculation that results in a teacher's annual growth status. The net effect of rigorous teacher evaluation policies could further restrict instruction to the tested standards only.

Recurring in the survey findings are comments about learning gaps that are probably caused by “scope and sequence” weaknesses. Most assuredly, poor attempts to apply scope and sequence procedures across grade-level standards will complicate every aspect of instruction and set the stage for continuous lags in student progress. Another prevailing frustration pertains to textbook shortages in every subject area. The following example provided by a teacher captures the essence of the problem.

Standard RL.9-10 requires students to determine how the author draws and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare). Our students have such limited knowledge of history and literature that they cannot recognize allusions without serious scaffolding. Furthermore, as

there are no instructional materials to teach this skill, it becomes time consuming to seek out the resources to prepare the lessons.

Another participant questioned whether teachers are expected to remediate each and every learning gap in the knowledge and skills of high school students. In general, high school teachers do not understand who is accountable for instruction when standards are coupled, as in grades 9-10 and 11-12.

Age-appropriate Practices

The National Association for the Education of Young Children (NAEYC) defines developmentally appropriate practice (DAP) as an approach to teaching that gleans from the research on human growth and development. The intent of DAP is to optimize young children's natural gateways to learning and consolidating new information and skills. The process of determining the age appropriateness of standards is sometimes referred to as age validation. Similar to the validation of content standards, age validation should include panels of childhood education professionals. The essential question standards writers must ask is whether the learning expectations conform to what experts know about child development at a particular age (NAEYC, 2015).

In her presentation to the Commission, Dr. Megan Koschnick, a child development expert, described the approach taken by the CCSS developers as “top-down” and reliant upon an idealized “college and career ready” student as the template for developing the standards. On the surface, this approach might seem logical, but in reality, “back-mapping” from grade 12 to

kindergarten distorts timeless research on the natural stages of developing, adapting, and learning.

Referencing the work of Jean Piaget, the renowned pioneer of stage development theory, Dr. Koschnick cited a kindergarten literacy standard to explain the difference between concrete vs. abstract reasoning. This particular standard, which expects young students to understand “shades of meaning,” goes far beyond the literal worlds of five-year old students. As a brief explanation, terms such as believe, know, and wonder have approximate meanings. In fact, replacing “shades of meaning” with the familiar term, synonym, might validate the age-appropriateness of this standard. In short, language simplification could go a long way in resolving much of the angst generated by the CCSS. Wordiness does not equal rigor. As one Sandhills teacher stated, “Rigor is what the teacher requires. It has nothing to do with the standards.”

Teachers who participated in the Sandhills regional meetings submitted two categories of standards: 1) examples of developmentally appropriate standards; and 2) those that are questionable.

Appropriate

K.MD.B.3: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

RL.7.6.: Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

Questionable

- RI.2.2: Identify the main topic of a multi-paragraph text, as well as the focus of specific paragraphs within the text.
- RL.1.2: Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- RL.3.4: Determine the meanings of words and phrases as they are used in text; distinguish literal from non-literal language.

Deriving everyday lessons from fables and folktales could be problematic for nine-year-old students (typically grade 3), yet certain standards in the Reading Literature strand make this a requirement. As one teacher explains, “Recounting a fable or folktale poses no problem for my students, but determining a lesson or moral is always something that we struggle with. It’s an abstract process that many of my students are unprepared for.”

Another teacher stated that in RL.3.4 “students are not developmentally ready to understand the difference between literal and non-literal. Students do not understand the meaning of vague idioms because they do not use them in conversation.” Furthermore, teachers must keep in mind that figurative language plays a stylistic role in verbal and written expression, with meanings often wedded to American culture; therefore, English language learners would likely require extra attention when language standards have cultural-limiting implications.

The NAEYC is persistent in its scrutiny of the standards movement and urges education policy makers to evaluate content on the basis of learning expectations that align with child learning

and development. If standards experts ignore the voices of childhood educators, the NAEYC recommends the professional field to hold standards developers accountable for improper validation procedures.

Implementation and Sustainability

The success or failure of a new idea, regardless of scale, depends on the individuals who hold the reins of implementation and a vision of the change/innovation well beyond the transition period. The quality of the effort is best assessed from the perspectives of the direct users: classroom teachers, curriculum specialists, and to some extent, parents. Teachers and school leaders must have an appreciable degree of self-efficacy, knowing how to access and utilize new resources and mitigate implementation barriers. In the case of the CCSS implementation, two structural realities (time for instruction and aligned resources) prevail in discussions among teachers.

Ideally, the implementation of new standards should never place non-tested subjects “on hold” in order to reallocate time to the “tested” content. For example, comprehensive writing instruction, a non-tested content area, is often ignored in order to address tested curricula. The mindset of “what is tested is taught” looms largely over teachers during this climate of hyper accountability and testing. The following quote goes to the heart of what has become an implementation-sustainability conundrum.

“I miss the times when we helped our students gain a love for writing. Students learned how to ‘hook’ their readers. They developed their own voice and learned

the process of brainstorming. This emphasis on testing has taken huge chunks of time away from thorough teaching.”

Albeit understandable, finding ways to cut instructional corners undermines curriculum sustainability and robs students of a balanced instructional program. The following example is an anecdotal instance shared by a teacher.

“While the Common Core does contain strong writing standards, the number of standards and the emphasis on testing standards allow limited time to develop writers. I believe it would be a good idea to drop some of the reading standards so that an intense focus on writing is possible.”

Teachers who attended the Sandhills meetings shared examples of parent complaints about “untaught” subjects, especially writing instruction for the college-bound students. Several explained that parents do not understand the difference between writing/composition and handwriting. The basic message is that parents want their children to learn cursive writing; however, very little time is afforded to handwriting lessons.

Given the emphasis on informational text, several teachers described how the ELA curriculum is losing the resonance of literature study and critical analysis. One teacher put it this way, “A bus schedule is not Bryon.” Clearly, many teachers worry that informational reading is redefining the purpose of the English Language Arts curriculum. One teacher stated, “I would like to see ELA have its own content again.”

In order to implement and sustain standards-based curricula in North Carolina, school leaders must fully understand the negative, cascading effects of students without textbooks. The problem is substantiated in anecdotal accounts of teachers spending hours searching for teaching resources or “getting by” with old textbooks issued decades ago to students.

When asked to share the most common concerns of parents regarding the Common Core Standards, teachers in the Sandhills resolutely named “lack of textbooks” as that complaint. It is as basic as parents needing a textbook to help their children with homework. In that K-12 is pivoted toward digital textbook in 2017, one teacher raised a compelling point against this direction. Sensitive to poverty in many school districts, the teacher stated, “Digital textbooks divide students into winner and losers, with the poor kids always losing.” In general, teachers expressed balanced viewpoints on instructional technology, realizing that its primary purpose is to enhance student achievement. The teachers doubt that the digital movement will solve the current textbook problem in the state.

Mathematics Findings

The following areas represent the major concerns identified by the Mathematics Subcommittee:

1. Substantial editing is needed (e.g., wordiness, math errors, typos).
2. The standards are unclear to parents.
3. The skills and content are not age-appropriate.
4. Teachers have little flexibility in selecting teaching methods.
5. The standards are too elaborate and complicated.
6. Models are over-emphasized at the expense of standard algorithms.

7. Efficient conversion to instruction is questionable.

Specifically, the Mathematics Subcommittee noted the following problems in grades K-8: 1) poorly constructed standards statements; 2) overuse of models; and 3) shortage of instructional materials and textbooks. Regarding the high school standards, two findings are clear: 1) repeated standards; and 2) gaps in the coverage of requisite skills.

K-8

Poorly Constructed Standards Statements

In its review, the Mathematics Subcommittee identified numerous typos, errors, and mathematical mistakes in the North Carolina standards. In addition, some standards were identified as being poorly done, including the teaching of fractions. The Mathematics Subcommittee noted that standards relating to probability and statistics are strikingly poor. Specific information and examples regarding the clarity issues in the North Carolina mathematics standards are found in the Math Work Group Final Report, which is the appendix section.

Overuse of Models

The North Carolina standards specify that teachers frequently use models. Models can be used to illustrate math or to do mathematical calculations, and they are good for motivating standard algorithms and short-cut mental calculations. Models are generally intrinsically slower than the standard algorithms and arithmetic rules of calculation. Some are or can be made into

complicated obscure processes, which even Ph.D. mathematicians have a hard time reverse engineering (Ratner, 2014).

As evidenced by numerous published examples and parent complaints, some teachers make computations with models into monstrously complex exercises that parents and children cannot understand. In addition, these teachers require students to master these computations in contradiction to the NCDPI policy of letting students use any method they know. Some teachers have told the ASRC that "they know best" and parents, by implication, should just be quiet. This belief does not contribute to good cooperation between parents and educators.

The Mathematics Subcommittee concurred that models, when used judiciously, can be considered a good instructional technique. However, the subcommittee recommends that teachers be able to choose which ones work best for them.

Shortage of Instructional Materials and Textbooks

The lack of textbooks was a serious problem noted in teacher focus groups, surveys, and parent testimony. In the ASRC survey of K-8 teachers, 60.4 percent complained about the lack of texts and instructional materials. This deficiency has forced teachers to search for lesson plan material on the Internet, which can be time consuming, and often teachers do not have the resources to share the materials they find. Some LEAs have made lesson plans for their teachers, but these can vary across the state. This finding defeats the promise that all North Carolina students have equal opportunity to receive a quality education.

Focus groups brought to light that the lack of textbooks, the new teaching techniques that parents do not understand, and the unavailability of the Internet in some students' homes make it difficult or impossible for parents to help their children with their homework. The models are unknown to parents, and many teachers will not accept the methods used and understood by parents who teach them to their children.

High School Findings

In general, the high school mathematics standards suffer due to repeated standards and gaps in the coverage of requisite skills.

Repeated Standards

The first defect in the North Carolina mathematics standards is the word-for-word repetition of standards in different grades. In Maths I and II, there are eight repeated categories of standards that contain 23 common standards; in Maths I and III, there are eight repeated categories that contain 24 common standards; and in Maths II and III, there are 10 repeated categories that contain 29 common standards. The common standards are identical, except for about three to five that have different subsections. A table of these standards appears in the appendix section.

This repetition of standards creates confusion for parents and teachers about the specific content in each course and about the level of difficulty from course to course. Without guidance, teachers struggle to find material at the appropriate level, and parents do not know what their children are being taught.

A second defect in the high school standards is the lack of "real world" problems, which is in contrast with the stress put on them in K-8.

Gaps in the Coverage of Requisite Skills

Many gaps exist in the sequence of mathematics standards, and these gaps create obstacles for successful instruction. Topics are often left for the teacher to complete. For example, students are asked to plot trigonometric functions and logarithms in Math I. However, trig functions are not completely defined until Math III. Logarithms nor their properties are discussed in Maths I, II, or III. The properties of logarithms depend on the rules of exponents, which are not taught in high school mathematics. As a result, some teachers feel obligated to spend time on the laws of exponents and log and trigonometric functions so that plotting is not mere calculator button pushing. As a result, they will have trouble completing all of the standards. Other teachers will try to cover all or most of the standards and put up with the button pushing. Due to these gaps, LEAs often specify what teachers do and do not teach. As a result, differences arise, and it becomes unclear whether or not there is a consistent set of state standards.

In addition, geometry, the treatment of radicals, and factoring are slighted in the North Carolina standards. Logic, deductive reasoning, formal proof, and indirect proof have been eliminated except for a few simple exercises in triangle congruence, and little emphasis is given to basic typical multiplication and factoring patterns. Omitting these topics creates a gap in learning that students need for higher-level courses and college-level mathematics. Of equal importance are the many applications of deductive and indirect reasoning that adults apply daily. With the

national emphasis on critical thinking, it is difficult to discern why the CCSS omitted logic and formal proof in geometry.

The obsession with modeling continues as students are taught to multiply polynomials and to factor by drawing boxes. One college instructor reported trig students stopping to draw boxes in order to multiply two binomials and to factor a simple polynomial. Factoring basic polynomials should not require the time needed to construct a box. While models can certainly enhance a high school student's understanding, the learning should not stop with the model; otherwise, students will not be prepared for college level work.

Finally, probability and set theory are poorly done. Counting principles is missing, and there is a paucity of information about compound events. A teacher would have to spend extra class time to make these concepts clear. However, without the extra class time to make these concepts clear, the standards become shallow memorization exercises.

PART III. ASRC RECOMMENDATIONS

English Language Arts

1. Revise the current English Language Arts standards (K-12) with deliberate attention to the following criteria:
 - established theories of childhood learning and development;
 - content-specific learning tasks;
 - attention to scope and sequence;
 - precisely-worded statements containing a minimum of learning tasks;
 - grade-level, rather than “banded,” standards;
 - age-appropriate rigor; and
 - defined levels of student mastery.
2. Provide a variety of professional development opportunities to help school districts strengthen curriculum development policies and practices. Assistance to districts should include the following:
 - designing standards-based lessons and assessments;
 - developing “classroom ready” supporting documents;
 - managing instructional time in order to ensure systematic instruction of all ELA subjects; and
 - achieving strong alignment of standards, instruction, and testing.
3. Establish a definition of high-quality North Carolina ELA standards. Having a uniform definition will unify state and LEA efforts around the selection of classroom resources, developing state and local pacing guides; designing tests and assessments; and planning professional development goals. This definition will also serve as the gold standard for

all policy decisions pertaining to standards-based education in North Carolina public schools. At minimum, the definition should address the following criteria:

- childhood learning and development;
- scope and sequence (grade and content);
- age-appropriate rigor and challenge;
- focus and clarity;
- classroom implementation; and
- instructional resources.

Mathematics

In order to have world-class standards, all of the topics recommended by the National Mathematics Advisory Panel (NMAP) for the high school mathematics sequence should be included in the North Carolina standards. In addition, the following recommendations are offered for grades K-8 and high school mathematics.

Grades K-8

2. Adopt the Minnesota standards, which may require some editing to fit North Carolina's needs while meeting the NMAP benchmarks. The revision process should include experts in childhood learning and development, a few university faculty, and a significant number of experienced North Carolina teachers with reputable success teaching K-8 mathematics. The State Board of Education, instead of NCDPI, should choose this committee because some members of NCDPI have extensive connections with the national common core group.

Grades 9-12

1. Return to the sequence of study, as in Algebra I, Geometry, and Algebra II, in light of this report's analysis.
2. Realign the high school math standards to make clear what is to be taught and learned in the curriculum and benchmarks.
3. The group constructing the North Carolina integrated math sequence should consist of one or two university faculty and a significant number of experienced North Carolina teachers with reputable success teaching high school mathematics. The State Board of Education, instead of NCDPI, should choose this committee because some members of NCDPI have extensive connections with the national common core group.

Testing Recommendation

Contingent upon State Board of Education adoption, the NCDPI should align future tests and assessments to the revised standards. Given that most standardized testing is currently aligned to the Common Core State Standards, it is recommended that the State Board of Education and NCDPI use resources within the state to develop North Carolina tests for the purpose of measuring student proficiency.

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