# Examining the Content and Context of the Common Core State Standards: A First Look at Implications for the National Assessment of Educational Progress

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This introduction introduces a volume of four reports by the NAEP Validity Studies Panel that explore the relationship between NAEP and the Common Core State Standards (CCSS) and consider how NAEP can work synergistically with the CCSS assessments to provide the nation with useful information about educational progress. The complete volume can be found at www.air.org/common_core_NAEP.

Editors:
*Frances B. Stancavage, Project Director*
*George W. Bohrnstedt, Panel Chair*

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# Introduction

Since its inception more than four decades ago, the National Assessment of Educational Progress (NAEP) has served as a key indicator of what the nation's students know and can do in academic subjects. NAEP's role has evolved over time in response to the changing educational landscape. As the states became more invested in using assessments for educational accountability, Congress responded by expanding NAEP's mandate to include state (as well as national) estimates of student achievement. Eventually, under the No Child Left Behind Act, state NAEP assessments became more frequent and more comprehensive, with state-level participation in Grades 4 and 8 reading and mathematics assessments required by law. With every state developing its own assessments for accountability and setting its own benchmarks for proficiency, NAEP assessments provided a mechanism for putting the achievements of students in all states on a common scale. In addition, NAEP assessments have served as independent monitors of progress because they have no high-stakes consequences for schools or students. NAEP's frameworks also are not aligned with any one curriculum, but are intended to capture the achievements of students schooled under different curricula.

In addition to reflecting the different curricula in the states, NAEP also must embody emerging themes in education in a manner that contributes to the educational dialogue and positions NAEP assessments to measure new aspects of student learning when they occur. That is, to fulfill its mission, NAEP must both lead and reflect.

Now, the educational landscape is changing again. Under the leadership of the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO), a new set of common standards, the Common Core State Standards (CCSS), have been developed and widely adopted by the states. These new standards, and the assessments being built to measure them, offer the possibility of far greater uniformity in curriculum and assessment across the nation than has characterized U.S. education in the past. In addition, the CCSS embody many emerging themes of education reform, including a focus on college and career readiness for all students by Grade 12, a more coherent set of learning expectations across grades that builds on contemporary research into learning progressions, and an acknowledgment of the greatly expanded role of technology in teaching and learning.

In this context, the NAEP Validity Studies Panel (NVS Panel) determined to devote a substantial portion of its annual validity research agenda in 2011 and 2012 to exploring the relationship between NAEP and the CCSS, and to considering how NAEP can work synergistically with the CCSS assessments to provide the nation with the most useful information about educational progress. This is a very early look at a changing landscape. States are just beginning to roll out their CCSS-based curricula, and the federally funded consortia that are developing assessments for the CCSS will not begin operational testing until the 2014–15 school year. Nevertheless, it is clear that the CCSS, and the larger education trends that they embody, will be a major factor in shaping NAEP's future. By acting proactively, but deliberatively, the National Assessment Governing Board (Governing Board) and the National Center

for Educational Statistics (NCES) can support NAEP's continued validity and enhance its utility over the coming decades.

## The Studies

Included in this volume are two substantial studies exploring the relationship between the content of the NAEP mathematics, reading, and writing assessments and the CCSS in mathematics and English language arts (ELA). In part, because the assessments being developed by the two federally funded consortia to measure the CCSS (the Partnership for Assessment of Readiness for College and Careers [PARCC] and the Smarter Balanced Assessment Consortium [Smarter Balanced]) were at a very nascent stage when this work was being done, the studies focus on the standards themselves, while acknowledging that a comprehensive analysis will eventually require an examination of the consortia assessments at the item level. These two content studies are complemented by two shorter white papers that explore, respectively, the potential for incorporating learning progressions into NAEP assessments and the implications for the NAEP program of coming changes in psychometric approaches to statewide testing.

Following are brief descriptions of the major findings from each study.

### *The National Assessment of Educational Progress and the Common Core State Standards: A Study of the Alignment Between the NAEP Mathematics Framework and the Common Core State Standards for Mathematics (CCSS-M)*

*Gerunda Hughes, Phil Daro, Deborah Holtzman, and Kyndra Middleton*

This study by Dr. Hughes and colleagues convened a panel of mathematicians and mathematics educators to compare the Grades 4 and 8 NAEP mathematics frameworks with the CCSS in mathematics (CCSS-M). For the CCSS-M, adjacent grades were included in the analyses.

*This study found the preponderance of content in the CCSS-M also is found in the NAEP Mathematics Framework, but with some differences.* The differences are potentially important and should receive attention in the normal revision of the framework and the assessments. Four types of discrepancies were observed. Compared to the NAEP framework, the CCSS-M have:

1. More rigorous content in eighth-grade algebra and geometry.
2. More extensive and systematic treatment of mathematical expertise (found in the Standards for Mathematical Practice).
3. A more conceptual perspective on many mathematical topics, explicitly stating the mathematics to be understood rather than the type of problem to be solved.
4. Some content taught at higher grades than is assessed in the fourth-grade NAEP assessment. For example, the study of proportional relationships is concentrated in Grades 6 and 7, and data sets and probability are taught in Grades 6 and 7, respectively.

These are important differences and these areas should be considered a priority in the normal revision of the NAEP Mathematics Framework.

*The study also found that the CCSS-M include a preponderance of content included in the NAEP framework by the grade level assessed, with several important exceptions* as noted in the results reported above. As implementation of the CCSS continues, an analysis should be conducted to estimate the effect on overall NAEP scores that follows from dropping content from the curriculum that is assessed by NAEP but not included in the CCSS-M. This should be done to avoid misinterpreting this effect as a general decline in mathematics achievement, when it may be due to a specific decline in a subdomain that has been intentionally deemphasized in the CCSS-M.

### *Study of NAEP Reading and Writing Frameworks and Assessments in Relation to the Common Core State Standards in English Language Arts*

*Karen K. Wixson, Sheila W. Valencia, Sandra Murphy, and Gary Phillips*

This study by Dr. Wixson and colleagues convened a panel of reading experts, and a separate panel of writing experts, to compare the Grades 4, 8, and 12 NAEP reading and writing assessments with the CCSS in English language arts (CCSS-ELA). In addition to the NAEP frameworks, assessment materials from the 2009 and 2011 NAEP reading and writing assessments were used in the analysis.

Overall, the study found that *there is sufficient alignment between NAEP reading and writing assessments and the CCSS-ELA documents to make panelists cautiously optimistic about NAEP's continuing relevance and viability.* With attention to the specific issues identified in this report and a systematic program of special studies and probe studies to inform future assessments, the panelists concluded that NAEP could continue to serve not just as an independent monitor of student achievement in an era of CCSS, but also as an intellectual tool to promote the design and use of quality assessments apart from CCSS.

*Reading:* Many aspects of the current NAEP reading assessment reflect conceptualizations of the reading process found in CCSS-ELA documents, including a cognitive focus aligned with research, a broad range of text types, high-quality and appropriate length of texts used in assessment, attention to literary and informational comprehension, use of text pairs, attention to reader-text interactions in item development, inclusion of writing in response to reading, parsimony and elegance in crafting questions to align with specific texts, and thoughtful, meaningful items that are well sequenced and crafted.

Furthermore, the Governing Board's policy of aligning Grade 12 NAEP with standards for preparedness for postsecondary education and training is consistent with the intention of the CCSS-ELA standards to assure that students achieve college and career readiness no later than the end of high school.

Some specific similarities and differences include the following:

1. NAEP reading selections at Grades 4 and 8 generally fall within the quantitative ranges called for in the CCSS-ELA, while the Grade 12 passages examined are consistently less difficult than what is called for in the CCSS-ELA quantitative indexes.
2. The cognitive targets specified in the NAEP Reading Framework are compatible with the CCSS-ELA Anchor Standards.
3. An important area of difference between CCSS-ELA and the NAEP Reading Framework is the manner in which disciplinary reading is addressed. The conceptual framing for the CCSS-ELA positions disciplinary reading for the purposes of knowledge building. In contrast, the NAEP Reading Framework subsumes disciplinary texts under "informational texts," sampled from varied content areas and assessing general comprehension.
4. There are differences in how the NAEP Reading Framework and CCSS-ELA address vocabulary, with the CCSS-ELA placing a heavy emphasis on academic vocabulary.
5. The CCSS-ELA include K–5 standards for foundational skills, while NAEP reading assessments target comprehension beginning at Grade 4. Because foundational skills are not part of the NAEP reading assessments, comparisons of fourth-grade performance between NAEP and assessments built to reflect the CCSS may need to be carefully mapped and analyzed.

*Writing:* There are also broad similarities between the current NAEP Writing Assessment and the CCSS-ELA. Both the NAEP Writing Framework and CCSS present writing as a social, communicative activity; emphasize the importance of audience, purpose, and task; and treat rhetorical flexibility as an important component of skilled writing performance. The NAEP Writing Framework and the CCSS are aligned in other important ways as well: They address similar broad domains of writing, and identify and discuss essentially the same valued characteristics of effective writing—development of ideas, organization, and language facility and conventions. The NAEP scoring guides for writing emphasize adapting writing to purpose, task, and audience and the types of writing found in the CCSS-ELA, and the pool of NAEP writing prompts contains a broad range of audiences and forms, an aspect of range described in the CCSS-ELA.

The writing panel identified several gaps in alignment between the NAEP Writing Framework and the CCSS-ELA that should be considered as well:

6. The CCSS-ELA clearly emphasize integration of the language arts, while the NAEP Writing Framework does not. In particular, the CCSS-ELA stress writing about reading and writing from sources (writing based on research). NAEP writing tasks rely primarily on background knowledge and personal experience.
7. The CCSS-ELA are explicit in acknowledging that the teaching of writing is a shared responsibility across disciplines, and writing activities within the disciplines are integrated with content learning. Although the NAEP Writing Framework acknowledges the situated nature of writing and its importance in all

disciplines, the NAEP writing assessment deals with generic writing skills and general and academic vocabulary.

8. The NAEP writing assessment limits the role that technology plays in assessment to students' use of a computer to compose and edit with a limited set of commonly available tools. On the other hand, the CCSS-ELA convey a portrait of college and career-ready students who use technology and digital media strategically and capably.
9. The NAEP writing assessment assesses on-demand writing in an abbreviated time frame, while the CCSS-ELA emphasize writing under a variety of conditions, conveying expectations for students' use of writing processes.

### *The Relevance of Learning Progressions for NAEP*

*Lorrie Shepard, Phil Daro, and Fran Stancavage*

This paper discusses the history and use of learning progressions, including their use in the CCSS. It considers the potential for using learning progressions in NAEP, either as a guide to assessment development or as a reporting device.

The paper notes that learning progressions are a highly popular innovation in assessment and instructional design. The core principles that undergird them have strong theoretical and research grounding, although specific, practical applications are rare, at least in U.S. contexts. Given the salience of hypothesized learning progressions in the design of the CCSS and the Next Generation Science Standards (NGSS), it is important to consider the relevance of formally developed learning progressions for the future design of NAEP assessments.

Because NAEP assessments must be sufficiently robust to assess progress toward the standards across multiple curricula, it is highly unlikely that formal learning progressions (which require detailed development of instructional activities and corresponding assessment tasks tied to the frameworks) could be the main building blocks of a newly design NAEP. Nonetheless, NAEP assessments must be designed in such a way as to be able to monitor the success of deeper curricular reforms where they occur. For NAEP to continue to be an independent monitor, the Governing Board and NCES must have a strategic vision that attends to both breadth and depth in representing subject-matter expertise. In a recent white paper on the future of NAEP (National Center for Education Statistics, 2012), an expert panel recommended that the NAEP domain specifications be broadened such that the NAEP reporting framework as historically conceived would be situated within a larger, "super-assessment" domain. In this context, assessment tasks tied to learning progressions in mathematics, science, or literacy could be embedded within an extended or enhanced NAEP framework, and both performance outcomes and psychometric functioning of the assessment tasks could be compared for students with and without instructional opportunities tied directly to learning progressions curricula.

In addition to considering the possibility of testing learning progressions by embedding them within the NAEP sampling frame or administering them in special

probe studies, the authors also considered the feasibility of building example learning progressions into the NAEP item pool to enable their use as a reporting strategy. The authors constructed four quasi-learning progressions using existing NAEP items in combination with Balanced Assessment of Mathematics items but concluded, based on this exercise, that such an approach is infeasible and likely to be misleading until there is more widespread implementation of the CCSS and thereby greater congruence between a hoped-for and the actual empirical ordering of items.

### *What Might Changes in Psychometric Approaches to Statewide Testing Mean for NAEP?*

*David Thissen and Scott Norton*

The authors explored two psychometric features of statewide testing that, mediated through the CCSS consortia tests, are likely to have significant implications for NAEP assessments. The first is the move toward computerization of testing and the second is the greatly decreased number of unique state tests. The latter creates new challenges and opportunities for NAEP to serve as a common metric across states.

With regard to the widespread movement toward computerized testing, the authors conclude that computerization of NAEP assessments is inevitable. There are several reasons for computerization. NAEP assessments may be computerized so that technology-enhanced item types can be delivered when required by the frameworks, as has already happened with the science interactive computer tasks in 2009 and is planned for the technology and engineering literacy (TEL) assessment in 2014. NAEP assessments may be computerized so that they appear more comparable with the statewide assessments being developed by the consortia, or to facilitate linking with those assessments. They may be computerized simply because computer administration has become more cost effective—this will ultimately happen for all assessments as the cost of computing equipment decreases and the costs of printing and physical distribution and scoring of paper response sheets grow. Finally, all assessments will gradually become computerized as computer use becomes ubiquitous for real-world tasks, both within and outside schools.

The literature review conducted by Rosenberg and Townsend and included as an appendix to the white paper concluded that comparability of results can often be maintained as a test makes the transition from paper-and-pencil to computerized administration. At the same time, aspect of computerization often have an effect on results for some subgroups of the population. This suggests that the computerization of NAEP is best approached in the way that all other changes made to NAEP assessments since the advent of the "new design" in 1983 have been approached: Careful consideration should be given to the design of the computerized administration, and a bridge study should be carried out to ensure the comparability of results across the transition (unless an a priori decision is made to "break trend").

With regard to the anticipated decrease in the number of state tests, the authors note that assessments developed by the two major consortia, Smarter Balanced and PARCC, may reduce the number of statewide tests in Grades 4 and 8 from nearly 50

to the low single digits, starting in the 2014–15 academic year.[1] With such a small set of tests to work with, linkage may become feasible, permitting close quantitative comparison between NAEP results and those obtained with the consortia tests, and providing a mechanism to link the consortia tests' scales with each other across the two groups of states.

Because correspondence between the results of disparate educational assessments tend to change over time, any linkage between the NAEP scale and the consortia statewide tests will need to be maintained regularly over the years of their use. However, a singular opportunity exists in a short window of time—essentially right now—to design data collection for linkage between the NAEP scale and the consortia assessments while the latter are under development. At this time, central control remains possible, and cooperative agreements to collect suitable linking data may be more easily obtained than will be the case after the consortia tests branch and fork into two dozen statewide assessments.

## Conclusion

In general, the study authors, and the NVS Panel as a whole, were unanimous in recommending that NAEP continue to play its historical role as an independent monitor. In the short run, while the states are transitioning to the CCSS, NAEP assessments can provide a stable measure of trends in a shifting landscape of state assessments. In the longer run, the independent monitoring role for NAEP assessments is likely to remain important, in part because of the less biased perspective on achievement offered by NAEP's low-stakes administration, and also because there will still be a need to bring achievement for students in all states onto a common metric. Nevertheless, the NVS Panel cautioned that if NAEP is to remain viable as a credible independent monitor, it will need to evolve as instruction and assessment change around it. Furthermore, NAEP assessments must anticipate change in order to be able to measure it, and, as a result, the NAEP program should continue its tradition as a leader in assessment innovation. The consortia have high aspirations to deliver ground-breaking assessments based on the most current research. However, they are bound to be constrained by the cost and logistical requirements of providing individual student scores for all students in Grades 3–8 and high school. Freed of these constraints, the NAEP program can be more nimble and should use its competitive advantage to advance the art and science of assessment for the nation.

The NVS Panel also agreed with the following conclusions of the two white papers:

- Learning progressions are an important development that can increase the coherence between instruction and assessment, but they are unlikely to find a place in NAEP's design, given the fact that NAEP assessments must remain curriculum neutral and learning progressions are inherently curriculum-based.

[1] There are some states that have chosen not to join either consortium and will presumably continue to develop their own tests, at least for the foreseeable future.

- Computerization of NAEP assessments is inevitable and will offer the opportunity for a number of innovations and efficiencies. Bridge studies will be important to maintain trend during the shift to computerization.
- With the goal of providing a common metric against which the results of the PARCC and Smarter Balanced assessments can be compared, NCES should aggressively pursue the goal of a formal linking study to be carried out in concert with the field testing of the CCSS assessments.

As NCES looks to the future, examining areas of alignment and nonalignment between NAEP assessments and CCSS assessments is a first step. A next step might be to launch special studies within the NAEP program that could investigate the penetration of some of the more advanced skills espoused by the CCSS in contexts where these skills are being taught. Any changes to the main NAEP frameworks should be made gradually and deliberately, as uptake of CCSS-based curricula expands. This would ensure that NAEP maintains the appropriate balance between leading and reflecting.

It is our intention that the set of studies reported here will help NCES and the NAEP program begin their journey.