



# Aligning science assessment standards: Louisiana and the 2009 National Assessment of Educational Progress (NAEP)



Institute of Education Sciences  
U.S. Department of Education



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Summary

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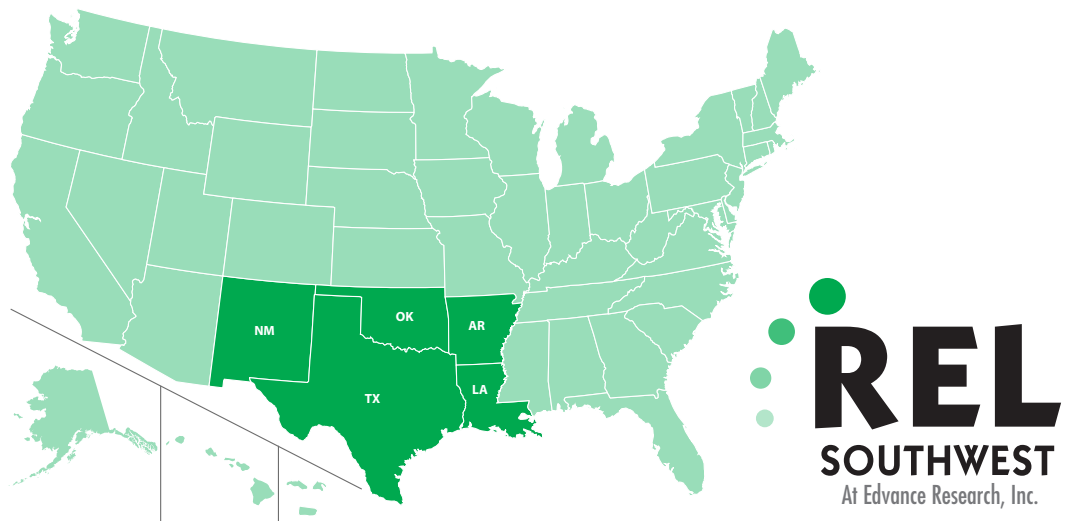
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## Summary

# Aligning science assessment standards: Louisiana and the 2009 National Assessment of Educational Progress (NAEP)

**This policy research document is intended for Louisiana policymakers to use when examining possible changes to the state assessment’s alignment with the National Assessment of Educational Progress (NAEP). The 2009 NAEP test is not yet in existence, so the purpose of this report is to give policymakers a headstart in determining where they might, if they so decide, begin to make changes in their assessment standards and specifications to develop an assessment system more closely aligned to that used for the NAEP.**

Reviewers observed that NAEP standards are based on descriptions of phenomena, whereas Louisiana’s standards are based on explanations of what a student does to explore the phenomena. They also found that NAEP standards tend to be widely inclusive (including, for example, heat and electrical conductivity in the same standard) whereas most states tend to see such topics as part of two separate standards or benchmarks. Reviewers found Louisiana’s science standards to be rigorous and found consistent spiraling through the grade levels. However, they also noted that teachers might more easily discern nuances in the standards if the grade level expectations, as well as the “key concepts” within the assessment guides, were integrated with the benchmarks.

In comparing Louisiana benchmarks and grade level expectations with the NAEP, the overall alignment ratings for elementary, middle, and high school are generally very high. The overall alignment rating for Louisiana science content and NAEP grade 4 is 2.6. (A rating of 1 indicates no alignment and a rating of 3, full alignment.) For grade 8, the alignment rating is 2.1. For grade 12, the rating is 2.5. Louisiana middle school content is partially aligned with the NAEP grade 8, while grade 4 and high school are most often fully aligned.

The instances of partial alignment at all grade levels are due primarily to the fact that Louisiana’s standards often imply NAEP content and the NAEP is often more detailed in its presentation of content. In addition, Louisiana contains many benchmarks that are unaddressed by the NAEP content statements. Generally, the combination of Louisiana’s benchmarks and grade level expectations at all grade levels aligns very well with the NAEP content statements, because the grade level expectations often parallel NAEP statements in their level of detail.

This report reveals current alignment issues between the state’s tests and the future NAEP tests and may be especially important to policymakers considering revising

science standards and assessments in line with No Child Left Behind requirements for state science tests in elementary, middle, and high schools. If state policymakers wish to increase the alignment between the state assessments and the NAEP, an area to consider is developing the comprehensive science task into a hands-on performance task. Revising assessments requires considerable time and resources, so policymakers must carefully consider their capacity to make changes and the degree to which such changes will benefit students.

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#### Grade 4 alignment

All grade 4 NAEP content statements are at least partially addressed by Louisiana benchmarks and grade level expectations. The Louisiana benchmarks also contain many items that are not listed in the NAEP's content statements. The combination of Louisiana's benchmarks and grade level expectations aligned very well with the NAEP content statements. Many partially aligned content items were found to be so because they imply content explicitly stated by the NAEP.

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teachers might more easily discern nuances in the standards if the grade level expectations, as well as the "key concepts" within the assessment guides, were integrated with the benchmarks.

The majority of NAEP content statements are fully addressed by various combinations of Louisiana benchmarks and grade level expectations, and the overall alignment rating for Louisiana and NAEP science content at grade 4 is 2.6.

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#### Grade 8 alignment

The Louisiana benchmarks cover many content topics not assessed by the NAEP, while most of the Louisiana content in its benchmarks and grade level expectations only partially addresses the NAEP content statements. This is primarily because Louisiana's standards often imply NAEP content and because the NAEP is often more detailed in its presentation of content. The overall alignment rating for Louisiana and the NAEP grade 8 is 2.1, indicating partial alignment.

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#### Grade 12 alignment

The Louisiana benchmarks contain many items not assessed by the NAEP. Several Louisiana benchmarks were noted for alignment to distinct parts of a more detailed NAEP content statement. Overall, Louisiana is well aligned to the NAEP. Many of the Louisiana high school standards only partially address the NAEP content statements at grade 12, because Louisiana's benchmarks often imply NAEP content and because the NAEP is often more detailed in its presentation of content. The overall alignment rating is 2.5.

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## Test specifications

The Louisiana assessment guides, which define the specifications for the state tests, ensure that testing of student knowledge and skills does not rely solely on multiple-choice items by including short constructed-response items and a comprehensive science task at each grade level. That enables a wider range of knowledge types to be tested than can be tested with multiple-choice alone. Louisiana records its proportions differently than the NAEP, so it is difficult to directly compare the relative amounts of testing time devoted to different topics. However, when focusing just on the three topic areas tested by the NAEP, the proportions of NAEP testing times are the

same as the proportions of points in the Louisiana test at grade 4 and in high school, and they are similar at grade 8, where Louisiana's points are allocated equally across subjects while NAEP students are tested slightly more on Earth and space science. Overall, there is a match between the test specifications in Louisiana's assessment guides and the NAEP science assessment and item specifications.

Standards and test specifications represent the starting point for the development of tests and test items. In the ideal alignment study state science assessments would be compared with NAEP assessments directly at the item level. At some future date the NAEP 2009 assessment items may be available for such a study.

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