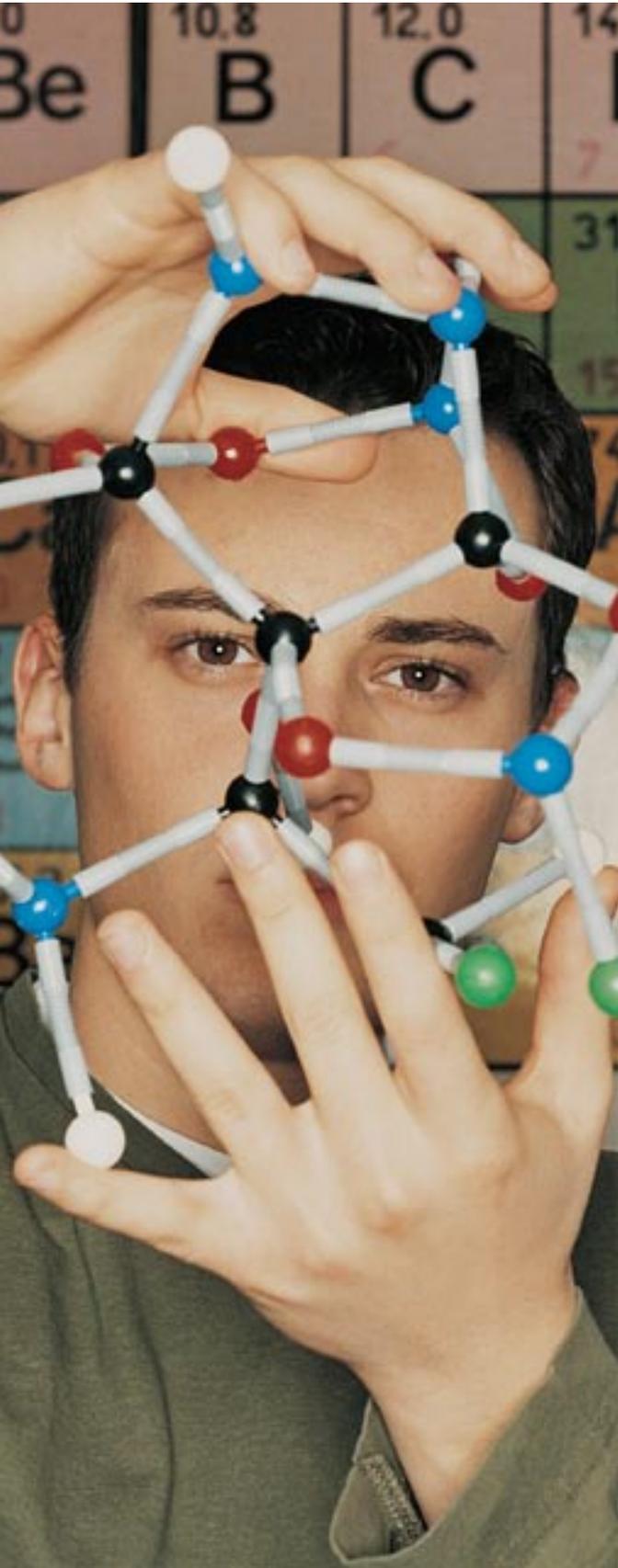




# Aligning science assessment standards: Oklahoma and the 2009 National Assessment of Educational Progress (NAEP)



Institute of Education Sciences  
U.S. Department of Education



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Summary

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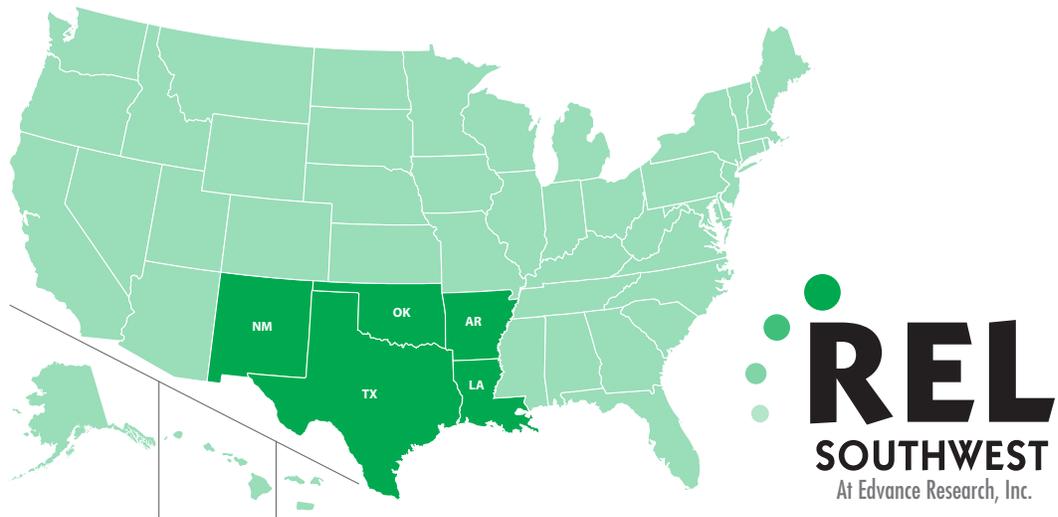
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## Summary

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

**This policy research document is intended for Oklahoma 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 head-start 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 with that used for the NAEP.**

Reviewers found Oklahoma to be generally unaligned with the NAEP. Oklahoma's standards, on the whole, are less detailed and contain less content than the NAEP. The majority of the NAEP content statements are unaddressed by the content standards and objectives in Oklahoma's test specifications documents. In grade 4, 82 percent of the NAEP content statements are unaddressed by Oklahoma, in grade 8, 53 percent of the NAEP content statements are unaddressed, and in NAEP grade 12, 80 percent of the NAEP content statements are unaddressed. In addition, in all three comparisons, Oklahoma has only about 25 percent of the number of standards in the NAEP. Standards in the Oklahoma test specifications documents are simpler and more general than those of the NAEP.

The average alignment rating for Oklahoma at grade 5 and the NAEP at grade 4 is 1.24, indicating a general nonalignment between Oklahoma and the NAEP. (A rating of 1 indicates no alignment and a rating of 3, full alignment.) At grade 8, the alignment rating is 1.53, indicating a level of alignment between nonalignment and partial alignment. At grade 12, the average alignment rating is 1.24, because the NAEP's physical science and Earth and space science content areas are unaddressed by Oklahoma's biology standards. The overall alignment rating for the NAEP life science portion only was found to be 1.92, indicating partial alignment when physical science and Earth and space science are excluded.

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, areas to consider are adding physical science and Earth and space science to the high school examination and including a wider variety of test item types. 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

Almost all NAEP content is unaddressed by Oklahoma's objectives in its test specifications document.

Reviewers found Oklahoma's standards to be far more general than those in the NAEP. The NAEP contains 33 content statements, 15 in physical science, 7 in life science, and 11 in Earth and space science. In contrast, Oklahoma's test specifications document contains only 8 content-laden standards (excluding process and inquiry standards), with 3 objectives in physical science, 2 in life science, and 3 in Earth and space science. In addition, 82 percent of the NAEP content in grade 4 is unaddressed by Oklahoma's objectives in the grade 5 test specifications document.

Reviewers noted that although the Oklahoma objectives are more general than those in the NAEP, the test specifications document is well organized. They also noted that the document appears to describe the parameters of the test more than the actual content standards.

It is possible that greater alignment would have been found if this review committee had also used the Oklahoma Priority Academic Student Skills standards for grade levels below grade 5. However, because the NAEP is itself a test specifications document, the review committee thought it most appropriate to use the Oklahoma test specifications document for this study.

The majority of NAEP content statements are unaddressed by Oklahoma's content objectives, and the overall alignment rating for Oklahoma science content at grade 5 and the NAEP grade 4 is 1.24.

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#### Grade 8 alignment

More than half of the grade 8 NAEP content is unaddressed by Oklahoma's objectives in its grade 8 test specifications document.

Reviewers found Oklahoma's standards to be far more general than those in the NAEP. The NAEP contains 43 content statements for grade 8, 16 in physical science, 8 in life science, and 15 in Earth and space science. In contrast, Oklahoma's test specifications document contains only 11 content-laden standards (excluding process and inquiry standards), with 4 objectives in physical science, 2 in life science, and 5 in Earth and space science. In addition, 53 percent of the NAEP content in grade 8 is unaddressed by Oklahoma's objectives in the grade 8 test specifications document.

Reviewers noted that Oklahoma's science processes and inquiry standards are thorough and well articulated, but the content standards, which were the focus of this review, are not sufficiently broken down into detailed components. Reviewers also noted that although the Oklahoma objectives are much more general than those in the NAEP, the standards are well organized.

Because the NAEP is itself a test specifications document, the review committee thought it most appropriate to use the Oklahoma test specifications document for this study.

This alignment study found the majority of NAEP content statements to be unaddressed by Oklahoma's content objectives, and the overall alignment rating is 1.53, indicating a level of alignment between nonalignment and partial alignment.

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### Grade 12 alignment

The majority of the grade 12 NAEP content is unaddressed by Oklahoma's objectives in its biology test specifications document.

Reviewers found Oklahoma's standards to be far more general than those in the NAEP. The NAEP contains 49 content statements for grade 12: 23 in physical science, 13 in life science, and 13 in Earth and space science. In contrast, Oklahoma's test specifications document contains only 13 content-laden standards (excluding process and inquiry standards), all in life science. Additionally, 80 percent of the NAEP content in grade 12 is unaddressed by Oklahoma's objectives in the biology test specifications document.

Reviewers noted that Oklahoma's science processes and inquiry standards constitute more than half of the biology standards. Reviewers also noted that although the Oklahoma objectives are much more general than those in the NAEP, the standards are well organized.

Because the NAEP is itself a test specifications document, the review committee thought it most appropriate to use the Oklahoma test specifications document for this study, although the Oklahoma document covers only biology.

This alignment study found the majority of NAEP content statements to be unaddressed by Oklahoma's content objectives, and the overall alignment rating for Oklahoma science content in biology and the NAEP grade 12 is 1.24, indicating nonalignment. However, the overall alignment rating between Oklahoma's biology test specifications standards and NAEP standards in life science is 1.92, indicating partial alignment. Thus, Oklahoma's end-of-instruction biology test specifications are partially aligned to the most comparable portion of the NAEP grade 12 content standards.

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### Test specifications

Reviewers commented that Oklahoma would do well to consider the scope of its standards alongside the standards of the NAEP and of other states to better understand the discrepancies in alignment. Reviewers at each of the three grade levels noted that despite the generality of Oklahoma's standards, the standards are well organized and the documents are easy to follow.

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.

Since the purpose of this report is to allow policymakers the opportunity to examine their alignment with NAEP before the test is implemented, no further research is suggested at this time.