



**Developing a System for Tracking State Assessment Policies in  
Science and Mathematics Education**

**An NORC project under a grant from the National Science Foundation**

**Study Design Paper**

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### Study Design Paper

Under a grant from the NSF Division of Research on Learning in the Education Directorate, the NORC project staff is completing development of a data collection and reporting instrument that will be pilot tested with 10 states in May-June 2015. The instrument design is based on needs for information on state assessment policies collected through review of research and focused interviews, review of prior surveys and models for policy reporting, and advice and consultation from an advisory panel of assessment experts and leaders in science and math education. This paper will serve as a summary of the steps that have been taken in developing the instrument for a State assessment tracking system, and the paper reports on recommendations toward establishing an instrument for collecting and reporting policy information by state that can be tracked over time.

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**Project Goal:** As one of the STEM education indicators development projects supported by NSF, the primary goal of the NORC project is to develop and test a model for collecting and reporting comparable information on state policies regarding student assessments in mathematics and science education. The current project will provide recommendations regarding an ongoing state assessment tracking system based on the results from this study and analysis of the policy information across the pilot states.

**Key study questions:** The project is designed to address two questions about state assessment policies for mathematics and science and how a tracking system can be developed and implemented:

- 1) What core information on state assessment programs and policies should be collected and reported across states, i.e., what information on types of assessments and characteristics of assessment programs are important to have available in a 50-state report or online resource?
- 2) To what extent are state student assessments in mathematics and science aligned to state-adopted content standards? What is the role of Common Core Standards-Mathematics and Next Generation Science Standards in state assessments?

#### Uses of Study Results and State Policy Information

The current two-year project will collect and report policy information from a group of states that participate in the pilot study. The pilot study report will be used to write recommendations to the National Science Foundation on further development and expansion of the tracking system to all the states. Reports from the online collection and reporting system will be designed to inform math and science educators and leaders at state, local, and national levels regarding state assessment policies across the states and how the policies and programs are changing.

#### Design Recommendations for Online Instrument to Report on State Mathematics and Science Assessments and Track Change over time

Following the review of existing research, interviews with state education managers, and discussions with Study Advisers, the project staff moved forward in developing a draft instrument for the State Assessment Tracking system. The draft instrument is built with a series of design recommendations that

take into consideration the needs for cross-state information on state assessment policies related to K-12 math and science education as well as from the prior experience of staff and advisers with surveys of state education leaders. The following design recommendations have been used in the instrument development to this point (January 2015). We are working with focus groups to review and refine the draft instrument and questions pertaining to critical reporting categories. In the spring 2015 current plan is to conduct a pilot study of the design with 10 states.

- a) *Tracking System Design:* There is high value in having cross-state information on state policies related to student assessment programs and how the assessments are constructed and administered, and the methods of reporting on results. The state assessment tracking system should provide the level and types of information that are useful to state and local education leaders and educators of math and science. Because of the many states reviewing their assessments policies and programs, and change at the state level, the state assessment tracking system will gain importance and usefulness. The system should be designed to facilitate reporting of periodic updates and changes in state policies and programs.
- b) *Timing and Schedule:* In the first year of the project (2014-15) as part of the design and pilot test phase, information will be collected and reported on State Policies and currently administered State Assessments in ten pilot study states. Based on the results and recommended revisions, a re-test of the design is planned for fall 2015.
- c) The instrument will be divided into three sections to facilitate review and completion of reporting by state education staff with different areas of responsibility: *Part A: Current State M/S Assessment Policies, Part B: State Assessment Content and Plans for New Assessments, Part C: Reporting State Assessment Results.* The Part A section will track information on required and voluntary state-supported assessments, with further details requested on required assessments.
- d) Focus of assessment reporting. The advisory panel recommended that the M/S Assessment policies instrument design and pilot study focus only on the assessments based on state academic standards and not to request information on state assessments based on alternate standards for students with severe cognitive disabilities. Information on alternate assessments for these students might be added at a later point in time to the tracking system.
- e) Review and input on the tracking system design will be gained from state math and science supervisors and from state assessment directors, as well as from the expert advisers.
- f) State assessments in math and science will be reported in relation to currently adopted state content standards, with some items constructed to determine the degree of relationship of state standards and assessments to the Common Core Standards in Math and the Next Generation Science Standards. State curriculum specialists in science and math will be asked to provide responses concerning the content of state assessments and alignment to standards. The project staff will request the cooperation and support of the state mathematics supervisors and state science supervisors associations for the state assessment tracking system.

- g) In science education, information will be requested on state assessments in science being developed and implemented based on new/ revised science standards since 2013 especially to determine the relation of state standards to NGSS (see Part B).
- h) Existing sources of information publicly available will be used to pre-populate from 50-60% of the policy reporting items by the project staff.
- i) Consistent with the grant proposal to NSF, the analysis and reporting on state assessment policies will provide for updates to the policy information as changes are made at the state level. Information will be requested on the characteristics of state assessments, types of items, grades assessed, annual testing period, and other information.
- j) In spring 2015, a pilot study will be conducted with 10 states to test the utility and feasibility of the Assessment Policies reporting instrument provided through an online tool. NORC will use grant funds to develop a web-based program that will ease collection and reporting of information by state.
- k) The results of the pilot test of the system in 2014-15 school year will be shared through an online report with the pilot states and with the advisory groups; and based on revisions, a second test of the design will be considered for the 2015-16 year.

**State Assessment Policies: Data Categories to be Reported**

*Part A: State Math and Science Student Assessments K-12, 2014-15*

- Tests administered Statewide in math and science to students G3-8 and 9-12, SY 2014-15
- State-supported voluntary math and science assessments G K-12
- Math assessment items from state consortia
- Uses/purposes of math and science assessment data
- Types of items in required state assessments
- Calculator use policy in math assessments
- Statewide testing administration period/dates
- Testing methods/ platforms –computer, paper-pencil
- Per-student testing costs (as prepared by states and shared with participating states only)

*Part B: Reporting on Assessment Results*

- Release items policy
- Types of data reports and timing
- Growth score reporting
- Reporting related to standards
- District/school reports URL
- Indicators of math and science courses, instructional time

*Part C: State Assessment Content in Mathematics*

- State Standards relation to CCSS-M
- Key math topics assessed in two selected grades (5, 11)
- Progression of math topics in elementary assessments

*Part D: State Assessment Content in Science and Plans for New Assessments*

- Development of State Standards in relation to NGSS
- Plans for new assessments and dimensions of science to be assessed
- Types of science assessments and items

Information for 50 to 60 percent of the items in these categories will be pre-populated by the NORC project staff. Current estimates of time for SEA staff to complete the information for their state are 60 minutes for parts A and B, and 30 minutes each for C and D. Parts C and D should be completed by a specialist in the subject area.

Results of the pilot study of the state assessment tracking system to be conducted in spring 2015 will be shared with the 10 participating states by September 2015. The project staff will also ask the SEA staff participating in the study to provide feedback regarding the time required and challenges in reporting information for their state. The pilot study results will be used to guide implementation of a 50-state math and science assessment tracking system in the 2015-16 SY.

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