

Building From the Research: Test Design for K-12 Science Achievement

National Academy of Sciences
Board on Testing and Assessment

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Committee's Charge

1. To provide advice and guidance to states on the design and development of high quality science assessment systems to meet the 2007 – 2008 implementation requirements of the No Child Left Behind Act; and
2. To foster communication and collaboration between the NRC study committee and key stakeholders so that the guidance provided by the committee's report is responsive and can be practically implemented.

Committee's Approach

- Review and synthesize research on the design and development of instructionally supportive assessment
- Gather input from stakeholders
- Commission design teams to create models for the design , development, and implementation of quality science assessments
- Commission papers that lay out visions for science assessments that may serve as future models
- Foster communication and collaboration with stakeholders throughout the course of the study and develop plans to disseminate their report and recommendations widely

Committee Resources



Charge to the Working Groups

- Provide advice and guidance to the committee so that the committee's recommendations will be responsive and able to be implemented
- Provide advice and guidance to the design teams so that their designs reflect what is important to teachers, assessment directors, and state science supervisors
- Serve as disseminators of the committee's report and recommendations to members of their professional communities

Working Groups

Science Supervisors	Assessment Directors	Science Teachers
Diane Hernandez, California	Shelly Loving-Ryder, Virginia	Amitabha Batsu, Pennsylvania
Tom Keller, Maine	Herman Meyers, Vermont	Conni Crittenden, Michigan
Linda Jordan, Tennessee	Patricia Roschewski, Nebraska	Hector Ibarra, Iowa
Shelley Lee, Wisconsin	Ann Smisko, Texas (retired)	Patricia LeGrand, North Carolina
Brett Moulding, Utah	C. Scott Trimble, Kentucky	John McKinney, Colorado
Marsha Winegarner, Florida		Valdene McLean, Nevada

Charge to the Design Teams

- Prepare a paper detailing their conception of a model for test development that takes into account the requirements of NCLB, incorporates quality standards for educational and psychological tests, and is sufficiently flexible that it can be adapted to the requirements of a variety of state assessment systems.

Design Team #1: Developing Instructionally Supportive Assessments

- W. James Popham, Team Leader
 - ◆ Design an assessment system that reflects the recommendations of the Commission on Instructionally Supportive Assessment
 - ◆ Illustrate a process by which states can prioritize their content standards, describe these high-priority standards thoroughly, develop assessments to measure them deeply, and report assessment results on a standard-by-standard basis
 - ◆ Provide optional classroom assessments to measure content not assessed on the state test

Design Team #2: Developing High Quality Commercial Tests

- Richard Patz, Team Leader
 - ◆ Make the commercial test design and development process more transparent and better understood
 - ◆ Illustrate some ways in which multiple item formats can be incorporated and used to create high quality assessments
 - ◆ Highlight ways in which reporting strategies can support instruction and provide diagnostic information about student learning

Design Team #3: Multi-Level, Multi-State Collaborative Assessments

- Edys Quellmalz and Mark Moody, Team Leaders
 - ◆ Present possibilities for multi-level (classroom, district, state) articulated assessment system designs
 - ◆ Develop a process for producing high-quality assessment items for a multi-state collaborative
 - ◆ Highlight ways in which technology can be used

Design Team #4: Teacher- Led, Classroom-Based Assessment

- Barbara Plake, Team Leader
 - ◆ Develop a model state science assessment system that is classroom-based but provides data that can be used by districts and states for accountability purposes
 - ◆ Detail the ways in a classroom-based system can validly and reliably measure important science skills for instructional and accountability purposes
 - ◆ Illustrate strategies for developing and supporting assessment literacy among teachers

Special Design Teams

- Lay out the developmental trajectory of one of two major “big ideas” in science – one from the life sciences and the other from the physical sciences
- Incorporate these developmental trajectories into a test framework that is developmental, testing the students' understanding in a sequence that cognitive science suggests it can be expected to develop

Dissemination

- The committee, working groups, and design teams will present the committee's report and the work of the design teams at regional and national conferences beginning in early spring 2004. Design team reports will be presented for public comment at multiple meetings of state science supervisors, science teachers, state assessment directors, and developers of large-scale assessment beginning in mid-May. The committee's report will be completed in late winter 2004.