The mission…

… of the National Science Resources Center, an organization of the National Academies and the Smithsonian Institution, is to improve the learning and teaching of science for all students in the United States and throughout the world.

We are committed to establishing effective science programs for all students by employing strategies that are informed by research, based on best practices, and leverage change through the development of strategic partnerships.

Our Core Values…

Quality

- Our work is of the highest quality and a standard for excellence.
- We bring discipline, cutting-edge knowledge, and critical thinking to our work.
- We ensure that our products and services are based on research on how people learn.
- We constantly look for ways to raise the bar and increase our impact.
- Our products and services undergo a rigorous research and development process.

Innovation

- We are self-reliant and provide visionary leadership to achieve results.
- We are forward-looking, resourceful, and creative problem solvers.
- We encourage risk-taking that leads to new ideas.

Impact

- We deliver relevant, valuable products and services to our customers.
- We are passionate about our mission.
- We commit to delivering tangible, measurable results that matter to the world.

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National Science Resources Center
THE NATIONAL ACADEMIES Smithsonian Institution

IMPROVING STUDENT ACHIEVEMENT IN SCIENCE…

THE NSRC BLUEPRINT: SCIENCE EDUCATION REFORM FOR SCHOOL DISTRICTS AND STATES…

- DEVELOPING INFORMED LEADERSHIP
- EMPLOYING A THEORY OF ACTION
- IMPLEMENTING A SYSTEMIC APPROACH
- COMMITTING TO A LONG-TERM PROCESS
- BASING WORK ON RESEARCH, BEST PRACTICES, AND EVIDENCE OF IMPACT

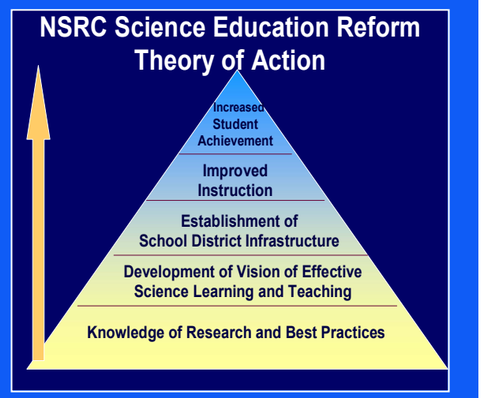
THE NSRC BLUEPRINT FOR K-12 SCIENCE EDUCATION REFORM

NSRC Theory of Action

The NSRC's Theory of Action, depicted below, advocates that the foundation of all reform is knowledge of research and best practices that should be used to develop a shared vision and an infrastructure for reforming science education programs for all students in districts and states.

The design of the theory and the associated work conducted by informed leaders to implement it should reflect research in the following areas:

- Development of science concepts
- Learning and teaching
- Assessment of learning
- Evaluation of programs
- Systems thinking
- Accountability structures
- Introduction of interventions and the process of change
- Scaling-up principles
- Incentives
- Methods for ensuring sustainability



NSRC Stages of Reform

Systemic reform requires leaders with technical knowledge of the five essential components of science education reform (see the NSRC Science Education Systemic Reform Model at right), as well as access to products and services that can be used to move leaders through the various stages of reform. During the past two decades, the NSRC has developed differentiated products and services with many organizations and individuals to assist districts, regions, states, and countries in moving through these stages. The work for each of these stages becomes increasingly more complex, requiring more time, resources, and technical expertise. A general outline of the Stages of Reform and related work is provided below.

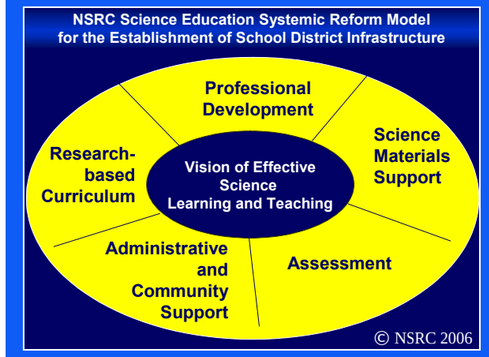
Increasing Time, Resources, and Complexity

Stages	Goals	General Description of Work
Assessing Strengths, Opportunities, and Challenges	Assess the landscape to understand the context of work.	Analyze the strengths, weaknesses, opportunities, and threats (SWOT). Monitor and document needs, challenges, and development of assets annually.
Building Awareness for Reform	Develop a shared vision of the importance of an effective science and technology education needed to prepare informed citizens and a scientifically literate workforce.	Plan and conduct annual awareness events for school, university, and business and other community leaders, including parents. The events are designed to help leaders with a stake in science education develop a vision of effective science learning and teaching and to understand the system that is needed to support this vision.
Initiating Reform	Provide leaders with the expertise and support needed to develop a five-year strategic plan for establishing a comprehensive and challenging K–12 science program of instruction for all students in their districts. The plan will benchmark with exemplary U.S. districts that have significantly improved student achievement, attitudes, and skills in science.	Annually identify and recruit of school district leadership teams to attend the NSRC Leadership Development and Science Education Strategic Planning Institutes. The institutes will prepare the teams to take leadership in establishing systemic reform programs based on research and promising practices.
Implementing Reform **Beginning** **Middle** **Advanced**	Provide a system of technical assistance to schools and districts in partnership with government, industry, the education community, and parents. This ongoing assistance will help school districts to establish, sustain, and continuously improve the infrastructure needed to support high-quality instruction for all students for a decade and longer.	Develop and implement academies and other events and services needed to provide school district administrators and teachers with the technical assistance required to implement research-based programs. Areas of assistance needed include the following: • Pilot testing and development of curriculum frameworks; • Differentiated professional development programs for moving teachers from being novice to developing competency; • Strategies for assessing student learning in science; • Cost effective and efficient materials support systems to supply teachers with equipment and supplies needed to teach science; • Strategies for integrating mathematics, reading, and writing within the context of learning and teaching science; • Programs for educating administrators and community leaders to establish, continuously improve, and sustain effective science programs in their communities, including NSRC Advanced Leadership Development Institutes; • Ongoing technical assistance services that regions and states need to provide districts to help them sustain their efforts.
Building Leadership Capacity	Develop a corps of informed leaders representing the scientific and education communities who have knowledge and expertise	Design annual program activities that will systematically cultivate a corps of 100 or more teachers, school administrators, scientists, and other community officials to become leaders who can conduct institutes, academies, and workshops as well as become advocates for reform.
Evaluation	Establish and monitor performance measures. Report progress and impact data	Develop a formative and summative evaluation program to assess the quality of program activities, progress being made in accomplishing goals, and assessing impact on student achievement.
Dissemination	Provide the public and other stakeholders with information about the program and its impact	Disseminate information to leadership groups and interested stakeholders.

6 Months — 1 Year — 5-7 Years and Longer

NSRC Science Education Systemic Reform Model

One critical aspect of the NSRC Theory of Action is the establishment of an infrastructure needed to support learning. To establish an effective infrastructure, leaders need to have a shared vision of effective science learning and teaching and implement five essential components simultaneously. The NSRC has defined this system as the NSRC Science Education Systemic Reform Model, which is illustrated below.



Components of the system include:

1. A curriculum framework and comprehensive research-based K–16 science instructional program based upon research findings.
2. Teachers participating in professional development programs that are aligned with current research about adult learning and designed to move teachers from novice to expertise.
3. Assessments that are aligned with research about how students learn and that elicit meaningful feedback about student learning.
4. Cost-effective and efficient systems that supply resources and materials to teachers.
5. Administrative and community leaders providing long-term support for research-based science learning and teaching.