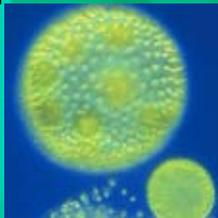




# NATIONAL SCIENCE RESOURCES CENTER

# 2003

ANNUAL REPORT



*National Science Resources Center*

THE NATIONAL ACADEMIES



Smithsonian Institution



*In Dedication* ~

JOANN DEMARIA, Science Teacher

*Former NSRC National Advisory Board Member*

*An educator and advocate whose legacy lives on through her remarkable contributions to science education.*

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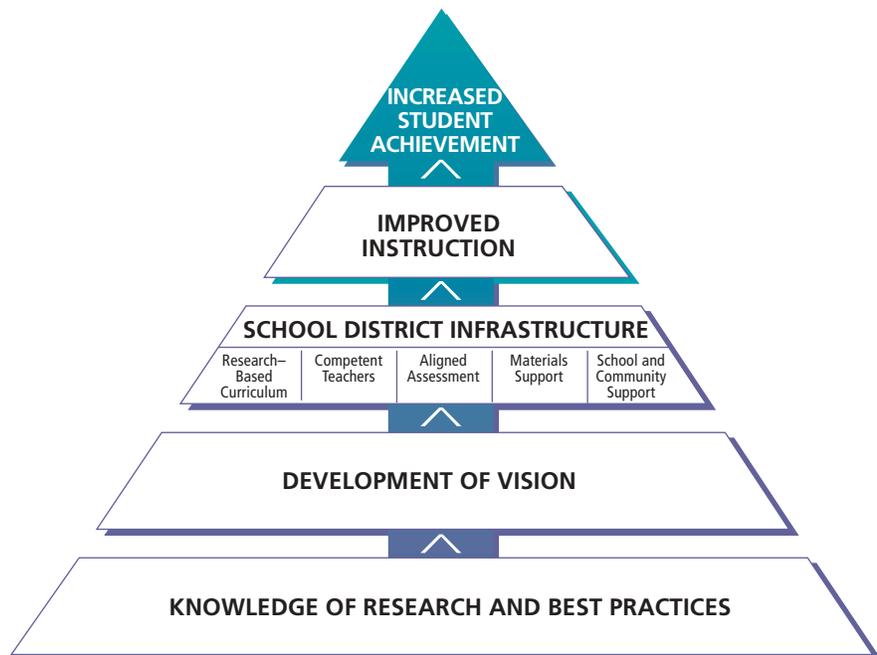
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# A National Leader in Science Education

The mission of the National Science Resources Center (NSRC) is to improve the learning and teaching of science in the nation's school districts. The NSRC is 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.

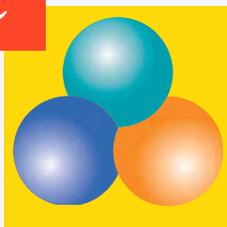
Through the work of its Centers of Excellence — Leadership and Assistance for Science Education Reform (LASER) Center, the Professional Development Center, and the Curriculum Development Center — more than 750 diverse school districts representing 20 percent of the U.S. K–8 student population are now implementing research-based, inquiry science programs in their communities. These accomplishments are based on the NSRC's Theory of Action and have been made possible through partnerships with academic institutions, museums, corporations, and foundations.

## THE NSRC THEORY OF ACTION



The NSRC developed this theory of action to guide school districts in the process of establishing research-based science education programs that result in improved instruction and increased achievement for all students.

## NSRC Accomplishments



### BECAME A BUSINESS-MINDED ORGANIZATION

During the past year, the entire staff began implementing a strategic business planning process designed to transform the NSRC into a business-oriented organization and to ensure its long-term sustainability. The plan is built upon the NSRC's well-established foundation of effective education programs.

The process will result in a plan for the NSRC's organization as a whole and specific business and marketing plans for the three Centers of Excellence — the Curriculum Development Center, the Professional Development Center, and the Leadership and Assistance for Science Education Reform (LASER) Center. [more on page 6](#)



### SUSTAINED THE WORK OF SCHOOL DISTRICTS CURRENTLY IMPLEMENTING RESEARCH-BASED PROGRAMS

The NSRC's Leadership and Assistance for Science Education Reform (LASER) Center continued its work with more than 750 school districts representing 20 percent of the K–8 student population in the United States. This ongoing assistance provided consultation and leadership training to facilitate the implementation of research-based science programs in their communities. [more on page 10](#)

### SCALED UP REFORM BY ENGAGING NEW SCHOOL DISTRICTS

The Leadership and Assistance for Science Education Reform (LASER) Center also began work with more than 50 school districts that participated in strategic planning institutes and initiated a five-year process for reforming their science education programs. [more on page 10](#)

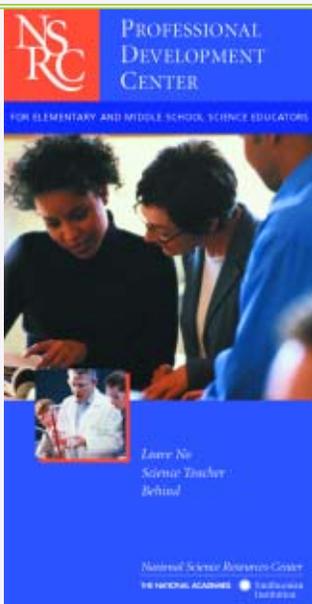
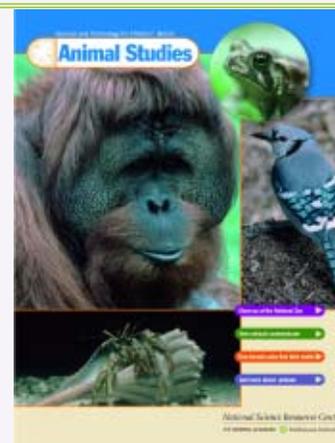
### CREATED A NEW WEB SITE

Creating a new Web site was a major project that was initiated in 2003, including establishing a unique URL for the NSRC. Now visitors can find us easily at [www.nsrconline.org](http://www.nsrconline.org) in addition to [www.si.edu/nsrc](http://www.si.edu/nsrc). [more on pages 8 and 9](#)



## DEVELOPED NEW INQUIRY SCIENCE CURRICULUM RESOURCES

- The Curriculum Development Center completed and brought to market the final two courses of Science and Technology Concepts for Middle Schools (STC/MS™), a comprehensive middle school science curriculum program comprised of eight courses. [more on page 13](#)
- The Curriculum Development Center also embarked on a major project to revise and enhance the Science and Technology for Children (STC®) elementary curriculum, scheduled for completion in June 2004, which includes:
  - Twenty-four revised Science and Technology for Children (STC) Teacher's Guides. [more on page 12](#)
  - Twelve STC science reading books for students in grades 4–6. [more on page 12](#)



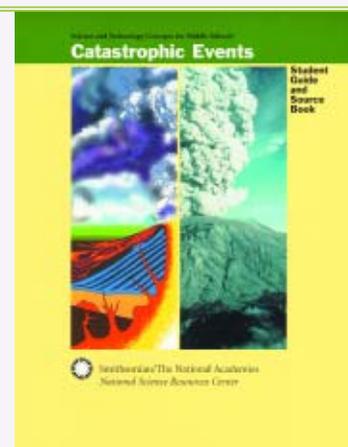
## CREATED A PROFESSIONAL DEVELOPMENT CENTER

Research tells us that students learn science best through an inquiry process. When coupled with exemplary curriculum, the inquiry process leads to better understanding and retention of concepts. For this reason, the NSRC established a Professional Development Center (PDC) to work with educators who are changing from the traditional textbook approach to hands-on, inquiry science teaching. During 2003, the PDC:

- Produced a comprehensive set of courses to prepare middle school teachers and teacher leaders to implement the STC/MS courses in the classroom. [more on page 11](#)
- Began work on eight graduate-level content courses for middle school teachers that are aligned with middle school curriculum programs. Field testing on these courses will begin during the summer of 2004. [more on page 11](#)

## RECEIVED ACCOLADES FOR ITS EXEMPLARY CURRICULUM

The NSRC received a national award —The Mark Trail Award — for its STC/MS Catastrophic Events course from the National Oceanic and Atmospheric Administration (NOAA) for featuring NOAA Weather Radio in this course.



## Message from the Advisory Board Chair

### S. Anders Hedberg



2003 has brought much change to the NSRC. Good change!

Over the past year, the organization responded to challenges identified in 2002 with the development of a well-formulated business plan. Guided by this plan, the NSRC reviewed its organizational structure and adjusted its staff roles and responsibilities to new business objectives. With a clear focus on teacher professional development, curriculum development, and systemic reform progression under the evolving LASER initiative, three Centers of Excellence were formed.

In close alignment with the organizational development of NSRC, the advisory board also restructured its operation for increased effectiveness during 2003. The advisory board now strategically serves its organization through three working committees.

First, the Committee on Board Structure and Function will oversee the board's composition, in terms of ensuring that members' expertise closely reflects the needs of the NSRC, and that its bylaws help guide and govern the relationship among the board, the NSRC, and its parent organizations.

Second, the Committee for Public Understanding of Science Education will ensure that a strong reform agenda is established and stewarded by effective working alliances among the NSRC, other leading reform champions, the National Academies, and the Smithsonian Institution.

Third, the Committee on Business Development has the responsibility to identify and propose strategies for fundraising and business operations directly aimed at revenue generation. This committee will also champion and oversee formation of strategic business alliances and licensing of products and services.

More than ever before, the future and the mission of the NSRC will depend on maintaining and strengthening its working relationship with the private sector. During the coming year, it will be essential for the NSRC and its advisory board to reach out to the diverse sectors of the business economy to entice corporate leaders to play an active role in science education reform. Striving for the economic vitality of the nation, several corporations have already recognized their role as primary stakeholders in science education. However, our goals will be set higher. By the end of 2004, the NSRC will have broadened its active partnership with the private sector to include health care, research, aeronautics, transportation, energy, finance, media, and entertainment, with a stated objective of improving the level of science literacy and deepening the talent pool for the entire nation.

Success will depend on focused priorities, continuous adjustment of strategic objectives, and deliberate execution of a sound business plan, all supported by financial stability. The NSRC's mission on behalf of our children's generation is nothing less than grand, and it is appropriate that our goals and objectives for the coming year will require us to "stretch" and reach high.

A handwritten signature in blue ink, appearing to read 'Anders Hedberg'.

**Anders Hedberg, Ph.D.**  
*Chair, National Advisory Board*

## Message from the Executive Director

### Sally Goetz Shuler



In 1985 two of the nation's most prestigious institutions, the Smithsonian and the National Academies, took a bold step to establish the National Science Resources Center with a mission to improve science education in the nation's 16,000 school districts. Leaders of both of these institutions had the extraordinary vision to see how an organization of both the Smithsonian and the National Academies had the potential to raise the status of science education and to bring together the education and scientific communities for catalyzing and sustaining change in the schools.

2003 represents the 18th year our staff has devoted extensive time and resources to fulfill this vision. During this period, the NSRC has evolved from an organization primarily doing curriculum development and outreach events for school districts to an organization focused on working throughout the United States and the world to improve the learning and teaching of science for all students. This evolving perspective has helped us to reshape our goals and programs into ones that build upon the assets of the National Academies and the Smithsonian; are informed by research and best practices; and leverage change in school districts and states through the development of strategic partnerships with academic institutions, museums, corporations, and foundations.

To reflect this new vision and its translation into the work of the NSRC's three Centers of Excellence, we redefined the communications and publications division, created a new office of finance and administration, and reached a milestone this year when we developed our first strategic business plan. This 18-month process of developing a plan for the overall organization was ambitious as we set stretch goals to become more business-minded and research-oriented in the development and implementation of our programs. The staff is to be commended for the work that was required to handle this period of transition and for their efforts to develop the knowledge and skills necessary to prepare and implement the business plan in the coming years.

This important work is focused on preparing the NSRC with its parent institutions to accomplish goals in science education that will lead to sustainable reform for all students, will inspire other individuals and institutions to join us in working toward those goals, and will leave a lasting legacy about the importance of science and science learning and teaching for our children, youth, and the next generation of leaders.

We would like to thank the Smithsonian and the National Academies for their continued support, the members of the NSRC National Advisory Board for their recommendations and assistance, and our partners and sponsors for their sustained commitment to improving science education programs for our nation's youth.

A handwritten signature in blue ink that reads "Sally Goetz Shuler". The signature is fluid and cursive, written in a professional style.

**Sally Goetz Shuler**  
*Executive Director*

## Business Planning to Ensure the NSRC's Long-Term Sustainability

Throughout the past year, the NSRC staff devoted significant time to a business-planning process designed to transform the NSRC into a business-minded organization. The plan represents a change in operations and mindset to position the NSRC for future success. The planning teams worked assiduously to identify the organization's strengths, highlight its core competencies, reposition the organization's value proposition, determine goals and install systems to respond to opportunities and customers' needs.

### DYNAMIC AND FLEXIBLE

Working with business planning consultant Chris Chopyak, the staff drafted the plan in order to be both dynamic and flexible as the organization grows. As a result, the NSRC is better positioned to ensure sustainability, continue core services, and scale up to serve more students with research-based, inquiry-centered science programs. The plan will be completed by the end of the second quarter of 2004 and will be presented to the National Advisory Board for approval in June of 2004.

**"The NSRC's mission on behalf of our children's generation is nothing less than grand, and it is appropriate that our goals and objectives for the coming year will require us to 'stretch' and reach high."**

ANDERS HEDBERG  
CHAIR, NATIONAL ADVISORY BOARD

### LEVERAGING OUR PARTNERSHIPS

The business plan includes strategies to take advantage of the unique differentiators the NSRC has over its competitors in the marketplace. These advantages include the NSRC's extensive networks and partnerships; its broad support among – and partnership with – business, industry, and private foundations; and its links to its distinguished parent organizations, the Smithsonian Institution and the National Academies.

Since 1985, the NSRC has enjoyed a high level of visibility and success in part because of its partnerships. These partnerships engage businesses as well as ever-evolving networks of education leaders and other stakeholders in communities across the United States. The NSRC's partners know that their work is making a difference to the educators and students they serve and will help to establish a scientifically literate public that can make informed decisions about their communities.

The loyalty, vision, and dedication of these partners and stakeholders are invaluable to the NSRC in this fast-paced, highly competitive economy. The NSRC has built the necessary and durable foundation for sustainable, effective education programs. As the business plan is implemented the NSRC will provide access to research, new products, and new partnering ideas as a way to maintain and grow the networks.

### A SHIFT IN REVENUE STREAMS

The plan also details goals and strategies to diversify and increase sources of revenues tied to projects and programs such as professional development courses and specific academies and trainings to meet individual customers' needs. This shift in revenue streams is planned to produce the financing required to sustain the NSRC, and modestly grow the annual budget of approximately \$4.2 million per year to more than \$6.3 million by fiscal year 2009.

### REORGANIZATION

In 2003 the NSRC staff, as well as the national advisory board, were reorganized to align with the business plan. This reorganization included the development of the three Centers of Excellence, the realignment of existing staff, and hiring for key positions including an assistant director for finance and administration.

The National Advisory Board has also reorganized to align with Smithsonian and National Academies' recommendations and policies. Anders Hedberg, board chair, addresses this reorganization on page four of this report.

**“This important work will leave a lasting legacy about the importance of science and science learning and teaching for our children, youth, and the next generation of leaders.”**

SALLY GOETZ SHULER  
EXECUTIVE DIRECTOR

## BUSINESS GOALS 2004 THROUGH 2009

In the next five years, the NSRC will focus on meeting the following internal and external business goals:

### INTERNAL GOALS

#### GOAL 1

##### Institutional Capacity and Management Excellence

*Establish and sustain organizational capacity by continuing to attract, cultivate, and retain highly skilled and innovative staff who can develop and deliver exceptional programs and services.*

A creative, talented, inspired, and highly committed workforce is critical for success in the education business. The NSRC will focus initially on retaining, developing, and enhancing the current staff.

#### GOAL 2

##### Capacity Building

*Leverage our intellectual capacity and impact through the continuous development and expansion of strategic partnerships.*

The NSRC will enhance its relationships with its current partners and collaborate with them to deliver products and services to new customers and partners. The NSRC also aims to involve and utilize its financial partners to bring new and diverse resources to the table.

#### GOAL 3

##### Financial Strength

*Sustain and expand the work of the NSRC through the increase and diversification of the NSRC's funding base from \$4.2 million to \$6.3 million in five years.*

In order to achieve this goal, the NSRC is planning to decrease its overall reliance on royalty revenue and significantly diversify its revenue streams to include fee-for-service, increased foundation support, and broadened support from business and industry.

### EXTERNAL GOALS

#### GOAL 1

##### Public Understanding of Education

*Champion public understanding of research-based science education programs with officials in the United States and abroad.*

The NSRC will develop specific outreach programs to increase the number of scientists and researchers who partner or work with the NSRC's and other research-based, inquiry science programs.

#### GOAL 2

##### Supporting Sustainability

*Assist school districts in sustaining the implementation of their science programs based on research and best practices.*

The NSRC will focus on better meeting the needs of its current partners and regional networks to sustain the education reform process in these key geographic and demographic regions.

#### GOAL 3

##### Scaling Up Reform

*Engage school districts representing an additional 20 percent of the U.S. K–12 student population in the process of improving their science programs based on research and best practices.*

The NSRC will increase the number of school districts served to represent 40 percent of the students in the United States. This number will represent the percentage of school districts that have participated as a district in one or more NSRC programs, those that stay “connected” to the organization (through regular attendance at national forums, or repeat attendance) over the course of two to three years, and those that refer others to the NSRC and grow their participation through increasing exposure in their areas for the NSRC.

#### GOAL 4

##### International Capacity

*Work with other countries to develop scientific and leadership capacity in the establishment of research-based science programs.*

The NSRC will expand the number of international programs to include five to ten new partner countries.

# Communications and Publications

## HIGHLIGHTS

### A NEW WEB SITE FOR IMPROVING THE PUBLIC UNDERSTANDING OF SCIENCE EDUCATION

Creating a new Web site for the NSRC was a major accomplishment in 2003. The Web team worked to achieve several goals: to provide comprehensive and easily accessible information about the NSRC to its diverse audiences, to serve as a resource about effective science education programs, and to use the site to market products and services. The Web team also worked to make the site more customer friendly and improve site usability while adding functionality and ease of maintenance.

### INCREASED ACCESSIBILITY

One simple but significant change is that we now have our own Web URL. Now visitors can find us easily at [www.nsrconline.org](http://www.nsrconline.org) in addition to [www.si.edu/nsrc](http://www.si.edu/nsrc).

### SUPPORTS THE NSRC THEORY OF ACTION

The newly constructed site now supports the NSRC's core principle that in order to increase student achievement, a science education program must be based on:

- Knowledge of research and best practices
- A vision for improved science education
- Integration of curriculum, teachers, material support, assessments, and community support
- Improved instruction

The NSRC Web site underscores the NSRC's Theory of Action (see also page one) by providing specific pages on research and best practices throughout the site, information about improving school district infrastructure, and professional development that fosters increased knowledge and skills. These resources include the information available to educators and scientists through the Smithsonian and the National Academies.

### CUSTOMER ORIENTED

During the past year the NSRC has worked to become more business oriented. As part of that effort the NSRC re-oriented the Web site to reflect the customer's point of view and is now organized by the following sections:

- About the NSRC
- School District Resources (includes LASER)
- Professional Development
- Curriculum Resources
- Student and Parent Resources
- Partnerships and Networks
- News

Other major changes were also made to improve ease of use.

- The site now provides easy-to-access information on the NSRC, such as staff lists, directions to the NSRC offices, and electronic files (PDFs) of NSRC informational brochures
- Attendees at workshops, seminars, and professional development courses will be able to register on-line
- Interactive bulletin boards for users of NSRC curricula and LASER services are also available

### IMPROVED FUNCTIONALITY AND EASIER CONTENT MANAGEMENT

With assistance from the Smithsonian Institution's Office of the Chief Information Officer, the Web team leveraged the Smithsonian's toolkit of software and hardware resulting in improved functionality. Development of the site in a content management environment will enable the NSRC's Web master to manage the content more efficiently and effectively. For example, the Web site allows content contribution by any staff person without special equipment or training and uses workflows for ease of content approval and deployment. The NSRC Web master will manage this process.

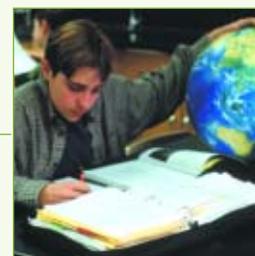
### A MARKETING TOOL

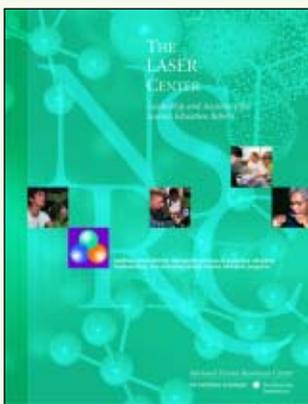
The new Web site will also serve as an important marketing tool for the NSRC. Several sections were added to the site to market specific programs and services, especially LASER activities and the Professional Development Center's courses. The site will also play an important role in marketing the NSRC's new STC Books as they are completed in 2004.

Global navigation is designed from our customers' point of view.



Photos represent a breadth of science students and educators.





This LASER Center brochure was published during 2003.

# Leadership and Assistance for Science Education Reform (LASER) Center

## HIGHLIGHTS

The LASER Center helps school districts nationwide implement standards-based, inquiry-centered science programs for K–8 students. The LASER Center conducts this work through a “systems” approach using each leverage point in a school system as a means of creating and sustaining change. All LASER programs involve teams of administrators, teachers, scientists, and engineers.

More than 750 school districts have participated in NSRC leadership institutes (1989–97) or LASER strategic planning institutes (since 1998). These school districts enroll about one out of every five K–8 students in the United States. An estimated 90 percent of school districts that have participated in these institutes are implementing their strategic plans and making significant progress in establishing effective K–8 science education programs for all students in their communities.

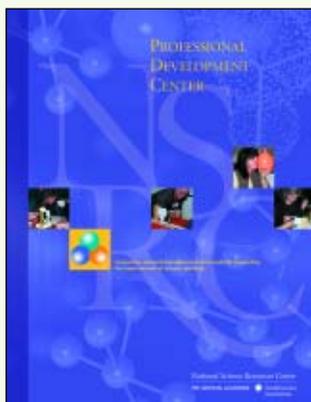
Recognized as one of the nation’s most strategic and systemic science education initiatives, the LASER Center is one of four National Science Foundation (NSF) Science Education Dissemination and Implementation Centers. The LASER Center is the NSRC’s principal vehicle for developing local leadership capacity and initiating and sustaining change at the local and state level.

## FY 2003 ACTIVITIES

INSTITUTION OF REFORM	IMPLEMENTATION OF REFORM AND BUILDING LEARNING NETWORKS
<p><u>NATIONAL</u></p> <p><b>June 2003</b> National K–8 Science Education Strategic Planning Institute Washington, DC</p> <p><u>REGIONAL</u></p> <p><b>February 2003</b> Washington State K–8 Science Education Strategic Planning Institute Vancouver, WA</p> <p><b>April-May 2003</b> Alabama K–8 Science Education Strategic Planning Institute Mobile, AL</p>	<p><u>NATIONAL</u></p> <p><b>October 2002</b> National Middle School Science Education Implementation Conference Keystone, CO</p> <p><b>March 2003</b> Association of Science Materials Centers (ASMC)/NSRC LASER Center Annual Networking Forum Philadelphia, PA</p> <p><b>October 2003</b> Association of Science Materials Centers (ASMC)/NSRC LASER Center Next Step Institute Green Bay, WI</p> <p><u>REGIONAL</u></p> <p><b>September 2003</b> Lucent Initiative Community Leaders’ Meeting New Providence, NJ</p>

# Professional Development Center

## HIGHLIGHTS



This Professional Development Center brochure was published during 2003.

### NSRC PROFESSIONAL DEVELOPMENT COURSES MODEL THE INQUIRY APPROACH AND ARE:

- Endorsed by the NSRC, an organization of the Smithsonian Institution and the National Academies
- Designed by the developers of STC and STC/MS
- Presented by NSRC PDC–certified trainers
- Designed to integrate educational technology and technological design in the classroom
- Supported by Carolina Biological Supply Company, publisher of STC and STC/MS

High-quality professional development is essential for effective science education. As teachers' understanding of science and pedagogy increases, they become more able to engage young minds in the sciences. Professional development is especially valuable when it relates to the curriculum that teachers are using. Courses offered through the Center, therefore, are tailored to the NSRC's curricula: Science and Technology for Children (STC) for K–6 students and Science and Technology Concepts for Middle Schools (STC/MS) for students in grades 6–8.

During 2003, the PDC focused on developing and piloting courses for STC/MS curriculum. The PDC will offer courses for the NSRC elementary curriculum, STC, in 2004. The PDC is also working with a group of university professors on syllabi for content courses to be used at the college level.

### PROFESSIONAL DEVELOPMENT COURSES

COURSE	AUDIENCE	CONTENT
<b>STC/MS Overview and Awareness Sessions</b>	Administrators, science content specialists, and teachers	<ul style="list-style-type: none"> <li>– An overview of the philosophy and goals of the STC/MS program</li> <li>– A hands-on experience with typical investigations used in STC/MS modules</li> <li>– A general description of the content of the STC/MS modules</li> </ul>
<b>STC/MS 3-Day Curriculum Implementation Courses</b>	Teachers	Prepare teachers to use an STC/MS module in their classrooms
<b>STC/MS 3-Day Curriculum Implementation Courses</b>	Teachers and teacher leaders (Potential trainers)	Prepare other education professionals to deliver the courses described above
<b>STC/MS Short Courses for Enhancing the Curriculum</b>	Teachers	One-day courses that focus on specific aspects of science instruction, such as: <ul style="list-style-type: none"> <li>– Understanding inquiry science</li> <li>– Identifying the conceptual strands in the STC and STC/MS curricula</li> <li>– Reading, writing, and notebooking in the inquiry science classroom</li> <li>– Integrating assessment strategies</li> <li>– Incorporating probeware and computer use in STC/MS</li> </ul>
<b>STC Courses</b>	Teachers	A range of professional development courses supporting the revised STC elementary curriculum to be offered late 2004
<b>STC/MS Content Courses</b>	Teachers	Provide teachers with hands-on, inquiry experiences that help them gain a deeper understanding of the concepts in the modules. NSRC works in partnership with academic institutions to develop and offer content courses contextualized to the eight STC/MS modules. They are applicable to any standards-based content course.

# Curriculum Development Center

## HIGHLIGHTS

During this past year the NSRC Curriculum Development Center embarked on a major project to revise and enhance the Science and Technology for Children (STC) elementary curriculum. This project will be completed in June 2004.

### STC TEACHER'S GUIDES

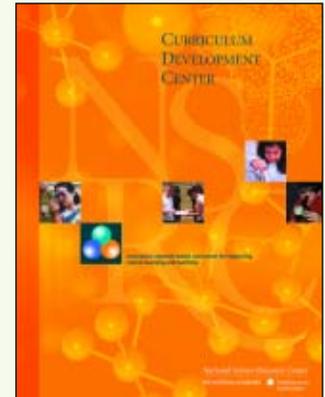
The 24 STC Teacher's Guides are in the process of being reviewed and revised. The improved guides will provide information in an easier-to-use format, and each STC unit will include a new research-based literacy component to help teachers integrate reading and writing with science. Even the format of the guides is undergoing a metamorphosis as it changes from a soft cover book to a sturdy, three-ring binder divided into eight sections.

The revisions team is working to align the new texts to national standards as well as the standards of several states that are in the process of adopting new science curricula. These states are Illinois, Indiana, Florida, and Idaho.

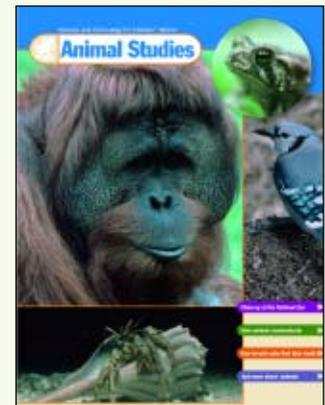
### STC BOOKS

An exciting addition to STC is the *Science and Technology for Children Books* program. These books are being created to address a growing concern in the education community — improving student reading comprehension. For each STC unit, the NSRC will publish a soft cover book filled with high-interest stories, dynamic informational articles, stories of famous scientists and their discoveries, and colorful photographs and illustrations to capture students' attention. Currently the series includes 12 books for the fourth- to sixth-grade STC units; books for the units from kindergarten to third grade will be developed in the near future.

These books will be contextualized to the science in STC units and will enhance children's literacy and comprehension skills. To ensure that the literacy component has been addressed, all books in the series are reviewed by a nationally recognized reading specialist. Also working on the team are a science expert and professional writers and editors. In addition, stories in the books will include several vignettes on Smithsonian research and researchers. Material is being provided by Smithsonian staff and researchers.



This Curriculum Development Center brochure was published during 2003.

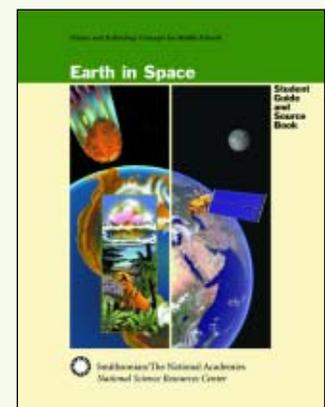
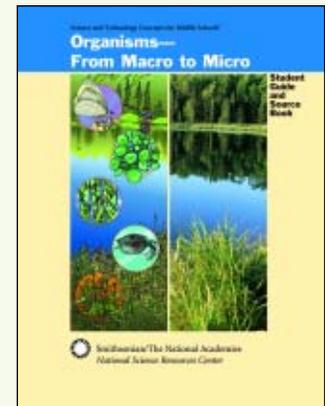


Twelve STC science reading books for students in grades 4–6 were begun in 2003 to add a literacy component to the STC curriculum.

## SCIENCE AND TECHNOLOGY CONCEPTS FOR MIDDLE SCHOOLS (STC/MS) IS COMPLETED

The NSRC published and released the final two inquiry-based science courses entitled *Earth in Space* and *Organisms — from Macro to Micro* in 2003. They represent the final two modules of a comprehensive eight-module curriculum, *Science and Technology Concepts for Middle Schools (STC/MS)*, designed by the NSRC to provide opportunities for middle school students to experience research-based science phenomena firsthand.

The NSRC science curriculum programs align with the National Science Education Standards of the National Research Council. Instructional materials are developed using a rigorous research and development process including field testing with diverse student populations and external evaluations to determine impact on student achievement.



Science and Technology Concepts for Middle Schools (STC/MS) Student's Guides.

## STC AND STC/MS SCIENCE CURRICULA

Grade Level	Life and Earth Sciences		Physical Sciences and Technology		
STC	K-1	Organisms	Weather	Solids and Liquids	Comparing and Measuring
	2	The Life Cycle of Butterflies	Soils	Changes	Balancing and Weighing
	3	Plant Growth and Development	Rocks and Minerals	Chemical Tests	Sound
	4	Animal Studies	Land and Water	Electric Circuits	Motion and Design
	5	Microworlds	Ecosystems	Food Chemistry	Floating and Sinking
	6	Experiments with Plants	Measuring Time	Magnets and Motors	The Technology of Paper
STC/MS	6-8	Human Body Systems	Catastrophic Events	Properties of Matter	Energy, Machines, and Motion
	6-8	Organisms – From Macro to Micro	Earth in Space	Light	Electrical Energy and Circuit Design

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Note: All STC units can be used at one grade level above or below the level indicated on the chart. STC/MS units can also be used at grade 9.

For more information about the NSRC's curricula please visit [www.nsrconline.org](http://www.nsrconline.org).

## International Programs

The NSRC extends its work internationally through the National Academies and the InterAcademy Panel (IAP). The IAP is a global network of 90 science academies designed to help its members develop the tools they need to participate in science policy discussions taking place beyond university classrooms and research laboratories. The IAP is a significant force in the global effort to reform science education.

During 2003, the NSRC worked collaboratively with many countries to improve their science programs. A brief description of these activities follows.

### CHILE

The Chilean Academy of Sciences, Ministry of Education, and University of Chile Faculty of Medicine launched an innovative program, “Inquiry Based Science Education for Children of Elementary Schools,” to improve the quality of science education in the country. The program has been implemented in six schools and will be expanded to 24 schools in 2004.

The program includes two NSRC curriculum units—Properties of Matter and Food Chemistry for grades 6–7—with five new units to be introduced in grades 1 through 4 and in grade 8 during 2004. Materials supporting these units have been assembled in Chile from prototypes donated by the NSRC. Each school maintains its own small materials center.

Early indications of the success of the program are positive: improved classroom atmosphere with better collaborative relations and teamwork, progress in learning autonomy, and increased motivation and class participation. Likewise, as teachers gradually adapt the methodology they increase their own content knowledge and develop improved self-evaluation methods, leading to a greater likelihood of classroom innovation on their part. The project has also fostered improved collaboration between school administrators and classroom teachers.

### EGYPT

In June 2003, the Bibliotheca Alexandrina (BA) in Alexandria, in cooperation with the NSRC, organized the conference “Science and Mathematics Education in the 21st Century.” The conference discussed the experiences of science education development programs worldwide. Bruce Alberts, president of the National Academy of Sciences, and Sally Goetz Shuler, executive director of the NSRC, participated in the conference along with 30 other speakers from around the world and several hundred participants.

The Center of Special Studies and Programs, a research center affiliated with the BA, plays a vital role in the promotion of science education in Egypt. Its activities include the organization of international scientific conferences, for which invitations are sent to educators and teachers as well as students, with no registration fees required. All conferences organized by the BA are open to the public without restriction.



## MEXICO

In May 2003, the Science Academy of Latin America, in collaboration with the U.S.–Mexico Foundation for Science, the NSRC, and other organizations, held the Second International Conference on K–12 Science Education. The conference was held in Monterrey, N.L., the same site of its predecessor event in September 2001. The conference presented social and economic impacts of hands-on, inquiry-centered science education programs to hundreds of decision-makers in education, government, business, academia, and the society at large to expand support for these programs. NSRC executive director Sally Goetz Shuler participated in the conference.

Mexico continues to make significant advancements in improving science education. To date, well over 2,000 Mexican schools are using student guides from the NSRC's STC curriculum, some 20 representatives from Mexico have attended LASER strategic planning institutes, and four education leaders from Mexico have served as faculty members at those events.

## NAMIBIA

A southwest African nation the size of Texas but with one-tenth the population, Namibia is investigating, with assistance from the NSRC and U.S. government agencies, a pilot project for the implementation of inquiry science education in elementary schools.

To initiate the project, a team of six education leaders from Namibia and three Peace Corps staffers attended the National LASER K–8 Science Education Strategic Planning Institute in Washington in June 2003. Working with their Peace Corps colleagues, the Namibia team developed a strategic plan that calls for training teacher leaders in selected science units and using science kits in some classrooms around the country. The NSRC will share its expertise in implementing systemic science curriculum reform, assist in training on inquiry-based teaching, and provide science kits in a proposed pilot project and advise and support how they should be adapted for use in Namibia. After two years, the Namibia Ministry of Basic Education, Sport and Culture will evaluate the success of the pilot and consider its expansion into more schools. The pilot is funded by the U.S. Agency for International Development (USAID). The Peace Corps is considering using the concept in other developing nations.

## SWEDEN

The Royal Swedish Academy of Sciences (RSAS) has been working with the NSRC since 1997 through the NTA project, a school development program in science and technology for teachers and students in grades K–6. Thirty-four municipalities and four independent schools participated in 2003. NTA has translated and adapted 14 units of NSRC's Science and Technology for Children (STC) including professional development for teachers. One of the goals of the NTA project when it started was to involve 20 municipalities and to adapt 14 units. These quantitative goals have been achieved with good measure. The municipalities and independent schools have now established a cooperative economic association, NTA Production and Services, and will continue the NTA program.



# Finance & Administration

## NSRC CORE OPERATIONS

The NSRC received a total of \$1,375,000 to support NSRC core operations from both the Smithsonian Institution and the National Academies.

The Smithsonian Institution provided \$914,000 of support from three sources: the Smithsonian's federal appropriations budget (\$167,000), the Smithsonian's general trust fund (\$278,000 - the NSRC was assessed a permanent reduction of \$26,000 from the general trust fund for FY 2003), and an indirect budget of \$469,000 that resulted from general and administrative rates charged against two National Science Foundation (NSF) grants.

The National Academies supported the NSRC with a total of \$81,000 in an indirect budget for NSRC operating and administrative costs. A total of \$380,000 in royalty funds from the elementary STC curriculum was transferred from the National Academies to the Smithsonian and was used for operational and administrative services (\$218,000) and for communications and general publications (\$162,000) during FY 2003.

Additionally, the Hewlett-Packard Company presented the NSRC with an in-kind gift of equipment worth an estimated \$60,000.

## NSRC CENTERS OF EXCELLENCE

During FY 2003, the NSRC received a total \$3,144,000 in support of program activities. Support was obtained from three sources:

- Grants awarded by the NSF and nongovernmental foundations
- Gifts from corporations and foundations
- Registration fees for services provided to school districts and other institutions

### NSRC CURRICULUM DEVELOPMENT CENTER

The STC Revisions project received a total of \$569,000 from the elementary STC curriculum royalties during FY 2003.

### NSRC LASER CENTER

The NSRC LASER Center received a total of \$2,096,000 of financial support during FY 2003. This included an NSF grant for \$1,304,000. A total of \$647,000 was received from the following private foundations and corporations: Bristol-Myers Squibb Foundation, Inc. (\$175,000); Carolina Biological Supply Company (\$75,000); Delta Education (\$75,000); Lucent Technologies Foundation (\$225,000); the Hewlett-Packard Company (\$77,000); and the Shell Oil Foundation (\$20,000). A total of \$145,000 of support was collected in the form of registration fees from school districts, which was applied to the costs of LASER events held in two regional sites and in Washington, D.C.

### NSRC PROFESSIONAL DEVELOPMENT CENTER

The NSRC Professional Development Center received a total of \$479,000 of financial support during FY 2003. This included a total of \$300,000 in royalty funds from the elementary STC Curriculum which was transferred from the National Academies to the Smithsonian Institution to support the Professional Development Center.

In addition, \$25,000 from the Lucent Technologies Foundation was presented to the Professional Development Center. Other support included \$149,000 from the Kellogg Endowment Fund, and the Professional Development Center received \$5,000 from registration fees.

# NSRC Core Operations

## EXECUTIVE OFFICE, FINANCE, AND ADMINISTRATION

All amounts in \$000s	FY00 (Actual)	FY01 (Actual)	FY02 (Actual)	FY03 (Actual)	FY04 (Projected)
<b>Smithsonian Institution</b>					
Federal*	230	153	161	167	279
General Trust**	274	290	287	278	290
Indirect Cost Budget***	449	466	466	469	234
<b>Subtotal</b>	<b>\$953</b>	<b>\$909</b>	<b>\$914</b>	<b>\$914</b>	<b>\$803</b>
<b>National Academies</b>					
Indirect****	93	103	77	81	73
Royalty Fund	0	36	120	218	267
<b>Subtotal</b>	<b>\$93</b>	<b>\$139</b>	<b>\$197</b>	<b>\$299</b>	<b>\$340</b>

\* The increase in the NSRC's federal allocation is due to the reassignment of one FTE who was temporarily assigned to another Smithsonian Institution unit during period FY 2000 through FY 2003.

\*\* The NSRC was assessed a permanent reduction of \$26,000 from the general trust fund for FY 2003.

\*\*\* These amounts were derived from general & administrative rates charged against two National Science Foundation Grants obtained in support of NSRC projects. Additionally, the Smithsonian Institution provided the NSRC with in-kind support for administrative services, office and library facilities, building management services, rental of office and storage space, communication services, and information technology services.

\*\*\*\* In FY 2004 the NSRC was assessed a 10% reduction in its indirect fund from the National Academies.

## COMMUNICATIONS & GENERAL PUBLICATIONS

All amounts in \$000s	FY00 (Actual)	FY01 (Actual)	FY02 (Actual)	FY03 (Actual)	FY04 (Projected)
<b>Smithsonian Institution</b>					
Gifts & Non-Federal Grants	N/A	N/A	N/A	N/A	50
<b>National Academies</b>					
Royalty Fund	N/A	N/A	43	162	125
<b>Subtotal</b>	<b>N/A</b>	<b>N/A</b>	<b>\$43</b>	<b>\$162</b>	<b>\$175</b>
<b>TOTAL CORE SUPPORT</b>	<b>\$1,046</b>	<b>\$1,048</b>	<b>\$1,154</b>	<b>\$1,375</b>	<b>\$1,318</b>

# NSRC Three Centers of Excellence

<i>All amounts in \$000s</i>	<b>FY00</b> (Actual)	<b>FY01</b> (Actual)	<b>FY02</b> (Actual)	<b>FY03</b> (Actual)	<b>FY04</b> (Projected)
<b>NSRC CURRICULUM DEVELOPMENT CENTER</b>					
<b>STC/MS PROJECT</b>					
<b>Smithsonian Institution</b>					
Federal Grant	912	956	320	N/A	N/A
Gifts & Non-Federal Grants	375	501	295	N/A	N/A
<b>National Academies</b>					
Royalty Fund	500	360	65	N/A	N/A
<b>Subtotal</b>	<b>\$1,787</b>	<b>\$1,817</b>	<b>\$680</b>	<b>\$0</b>	<b>\$0</b>
<b>STC REVISIONS PROJECT</b>					
<b>Smithsonian Institution</b>					
Federal Grant	N/A	N/A	N/A	N/A	N/A
Gifts & Non-Federal Grants	N/A	N/A	N/A	N/A	300
<b>National Academies</b>					
Royalty Fund	N/A	N/A	N/A	569	309
<b>Subtotal</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>\$569</b>	<b>\$609</b>
<b>NSRC LASER CENTER</b>					
<b>Smithsonian Institution</b>					
Federal Grant	1,213	1,267	1,318	1,304	832
Gifts & Non-Federal Grants	636	748	615	647	1,250
Event Fees*	513	369	293	145	200
<b>National Academies</b>					
National Research Council Grant	N/A	35	N/A	N/A	N/A
Royalty Fund	105	221	177	0	0
<b>Subtotal</b>	<b>\$2,467</b>	<b>\$2,640</b>	<b>\$2,403</b>	<b>\$2,096</b>	<b>\$2,282</b>
<b>NSRC PROFESSIONAL DEVELOPMENT CENTER</b>					
<b>Smithsonian Institution</b>					
Gifts & Non-Federal Grants	N/A	N/A	N/A	25	100
Event Fees	N/A	N/A	N/A	5	120
<b>National Academies</b>					
Kellog Endowment Fund	N/A	N/A	N/A	149	100
Royalty Fund	N/A	N/A	N/A	300	200
<b>Subtotal</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>\$479</b>	<b>\$520</b>
<b>TOTAL PROGRAM SUPPORT</b>	<b>\$4,254</b>	<b>\$4,457</b>	<b>\$3,083</b>	<b>\$3,144</b>	<b>\$3,411</b>

\* Reduction in events fees is not an accurate reflection of activities. In FY 2003 corporations and foundations provided \$104,000 of support for registration fees that are reflected in the Gifts and Grants category. In addition, several LASER regions collected fees of \$100,000 in support of LASER activities which reflected cost-sharing.

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