Trends

Science

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Resources for Hands-On Science

Children, especially young children, learn science best when they have a concrete body of experience on which to base abstract concepts. Hands-on experiences are also the best way to spark the enthusiasm of young learners. For these reasons, the National Science Resources Center (NSRC), a joint initiative of the National Academy of Sciences and the Smithsonian Institution, has begun a number of programs to bring hands-on science to elementary schools.

Spreading the word. First, NSRC serves as a clearinghouse for the dissemination of information about science teaching materials, including the innovative materials developed by the seminal curriculum projects of the '60s and '70s. Our Science Teaching Resource Collection is a storehouse of information about past and present programs, an "institutional memory" for the field of science curriculum development. Through this collection and computerized database, educators can access ideas and approaches that have been tested over time.

Using the database, we have published a resource guide, *Science for Children: Resources for Teachers*,[1] and have distributed copies to each superintendent of schools and science supervisor in the United States. A companion database and resource guide for middle school science is now under development.

Developing modular units. Second, NSRC is developing new and innovative science teaching materials. The first such project is Science and Technology for Children (STC), funded by the MacArthur Foundation and a consortium of government agencies and corporations. This four-year project is developing 24 modular teaching units for grades 1 through 6 that will make hands-on science manageable for teachers.

These modular units are designed for teachers who do not have extensive backgrounds in science. They make use of inexpensive and commonly available materials, and each explores a topic that can be successfully investigated by elementary students. Examples of units are *The Life Cycle of Butterflies* (grade 2), *Electric Circuits* (grade 4), and *Experimenting with Plants* (grade 6). After the original development in classrooms, each unit is field-tested in additional classrooms across the country. The first three units will become available to schools in spring 1991.[2]

Providing support. NSRC's third area of effort is outreach to schools. During the past two summers, NSRC has held Elementary Science Leadership Institutes at the Smithsonian Institution for teams of teachers and administrators, who have come from 32 school districts and 25 states across the nation. During an institute, participants attend workshops on high-quality curriculum materials; participate in discussions on curriculum design, teacher inservice education, science materials support systems, and student assessment; and devise action plans for implementing hands- on science programs in their districts. After the institutes, NSRC continues to support participating districts in their efforts. Over time, we anticipate that these districts will become sources of assistance for other school systems.[3]

In addition, NSRC has helped to establish the Association of Science Materials Centers (ASMAC), which includes 65 school districts that have set up—or are planning to create—elementary science resource centers. These resource centers provide inservice training for teachers and produce and distribute the science kits used in hands-on programs.

Currently our nation's schools are not imparting an enthusiasm for science that capitalizes on youngsters' innate curiosity and their need to make sense of what they observe. To correct this, Luther Williams, of the National Science Foundation's Directorate for Education and Human Resources, urged "a general rebuilding, starting [with] better basic instruction in grade schools," as well as teaching that engages "students actively in the scientific process."[4] Through its programs, NSRC is sending this message by fostering support for science instruction that is in tune with both the potential of young people and our society's needs.□

[1]Copies of *Science for Children: Resources for Teachers* are available for $9.95 (or less, for quantity orders) from the National Academy Press, 2101 Constitution Ave., Washington, DC 20418. For more information or to order, call (202) 334-3313.

[2]For more information, write to the Carolina Biological Supply Company, c/o Richard Franks, 2700 York Rd., Burlington, NC 27215, or call (919) 584-0381, ext. 225.

[3]To obtain additional information about NSRC's programs, become a member of the NSRC Network, and/or receive the next issue of the *NSRC Newsletter*, write to: National Science Resources Center, Arts and Industries Building, Rm. 1201, Smithsonian Institution, Washington, DC 20560.

[4]L. S. Williams, "Organizational and Systemic Reform of Mathematics and Science Education: A National Strategy," speech given September 16, 1990, in St. Louis, Missouri.

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