



Improving
Student
Achievement
In Science &
Mathematics
In the Nation's
K-12 Schools

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through the National Science
Foundation-Supported Science
and Mathematics Education
Implementation and
Dissemination Centers

Promoting Quality Science & Mathematics Education

The programs of the National Science Foundation's (NSF) Division of Elementary, Secondary, and Informal Education focus on diverse aspects of science, mathematics, and technology education for students in pre-kindergarten through high school, as well as for learners of all ages who want to broaden their scientific and technological literacy.

The Division's programs also foster strong collaboration among higher education, K-12, and informal education sectors. They strive to provide an educational foundation for future generations of scientists, engineers, and technologists; for those pursuing collegiate and postgraduate education in other disciplines; and for those who enter the workforce directly after high school. The programs promote the achievement, competency, and literacy considered essential to inform citizens about the science, mathematics, and technology issues that affect their lives, thus providing effective advocacy for high-quality education in these fields.

The goals of the Division of Elementary, Secondary, and Informal Education are as follows:

- Promote public understanding of science, mathematics, and technology; build bridges between formal and informal education.
- Improve understanding of science, mathematics, and technology through research-informed, standards-based science, mathematics, engineering, and technology education for all K-12 students.
- Increase the nation's capacity to educate the science, mathematics, engineering, and technology instructional workforce by providing career-long professional development opportunities.

Eight Science and Mathematics Implementation and Dissemination Centers receive major support from the NSF's Division of Elementary, Secondary, and Informal Education to help school districts throughout the country improve student achievement in science and mathematics. The Centers do this by helping interested districts and/or schools implement high-quality instructional materials and identifying other sources of expertise and support.

Collectively, the Centers work in partnership with academic institutions, corporations, educational organizations, and school districts to meet several goals:

- Enhance student learning in science and mathematics.
- Base implementation and dissemination activities on research and the use of "best practices."
- Leverage resources to sustain the implementation of inquiry-centered science and mathematics curriculum programs with all students in local school districts.

The curriculum programs the Centers disseminate are research based. An emerging body of research indicates that when quality instructional materials are fully implemented—that is, consistently taught, using all components—the result is enhanced student achievement, compared with the use of traditional curricula. For example, a recent analysis indicates that students in classes whose teachers used NSF-supported physics curricula or participated in NSF-funded professional development achieved well above the level of students in comparable classes on the Third International Mathematics and Science Study (TIMSS) assessment of physics.

Promoting Quality Science and Mathematics Education Through Research-Based Instructional Materials

The eight Science and Mathematics Implementation and Dissemination Centers help schools and school districts throughout the United States implement research-based K–12 science and mathematics curriculum materials.

These materials reflect the following quality standards:

- Incorporate investigative, inquiry-based science, mathematics, and technology activities.
- Align with national standards for content, teaching, and assessment.
- Promote the success of all students.
- Promote positive student attitudes toward science, mathematics, and technology.

Effective implementation of such curriculum materials will enable students to acquire a deep understanding of science, mathematics, and technology. They will also be able to—

- Solve problems creatively.
- Apply knowledge to new situations.
- Use technology effectively and efficiently.
- Work productively with peers in teams.
- Enjoy their learning experiences as both children and young adults while simultaneously preparing for the new demands of a technologically transformed workplace.



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Science Education Implementation and Dissemination Centers

GRADES K-12

IMPACT New England at CESAME
617/373-8380
www.cesame.neu.edu

**EDC K-12 Science Curriculum
Dissemination Center**
617/618-2811
www.edc.org/cse

GRADES K-8

**The LASER—Leadership and
Assistance for Science Education
Reform—Center at the NSRC**
202/287-2063
www.si.edu/nsrc

GRADES 9-12

**The SCI—Science Curriculum
Implementation—Center at BSCS**
719/531-5550
<http://www.scicenteratbscs.org>

Mathematics Education Implementation and Dissemination Centers

GRADES K-12

EDC K-12 Mathematics Curriculum Center
800/332-2429
www.edc.org/mce

IMPACT New England at CESAME
617/373-8380
www.cesame.neu.edu

GRADES K-6

**ARC Center
Alternatives for Rebuilding Curricula**
800/772-6627, ext. 50
www.arccenter.comap.com

GRADES 6-8

Show-Me Center
573/884-2099
www.showmecenter.missouri.edu

GRADES 9-12

**COMPASS—Curricular Options
In Mathematics Programs for
All Secondary Students—Center**
800/688-1829
www.ithaca.edu/compass

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