

**TITLE 42 - THE PUBLIC HEALTH AND WELFARE**  
**CHAPTER 16 - NATIONAL SCIENCE FOUNDATION**

**§ 1862n. Mathematics and science education partnerships**

**(a) Program authorized**

**(1) In general**

**(A)** The Director shall carry out a program to award grants to institutions of higher education or eligible nonprofit organizations (or consortia of such institutions or organizations) to establish mathematics and science education partnership programs to improve elementary and secondary mathematics and science instruction.

**(B)** Grants shall be awarded under this subsection on a competitive, merit-reviewed basis.

**(2) Partnerships**

**(A)** In order to be eligible to receive a grant under this subsection, an institution of higher education or eligible nonprofit organization (or consortium of such institutions or organizations) shall enter into a partnership with one or more local educational agencies that may also include the department, college, or program of education at an institution of higher education, a State educational agency, or one or more businesses.

**(B)** A participating institution of higher education shall include mathematics, science, or engineering departments in the programs carried out through a partnership under this paragraph.

**(3) Uses of funds**

Grants awarded under this subsection shall be used for activities that draw upon the expertise of the partners to improve elementary or secondary education in mathematics or science and that are consistent with State mathematics and science student academic achievement standards, including—

**(A)** recruiting and preparing students for careers in elementary or secondary mathematics or science education;

**(B)** offering professional development programs, including—

**(i)** teacher institutes for the 21st century, as described in paragraph (10); and

**(ii)** academic year institutes or workshops that—

**(I)** are designed to strengthen the capabilities of mathematics and science teachers; and

**(II)** may include professional development activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses;

**(C)** offering innovative preservice and inservice programs that instruct teachers on using technology and laboratory experiences more effectively in teaching mathematics and science, including programs that recruit and train undergraduate and graduate students to provide technical and laboratory support to teachers;

**(D)** developing distance learning programs for teachers or students, including developing courses, curricular materials, and other resources for the in-service professional development of teachers that are made available to teachers through the Internet;

**(E)** developing a cadre of master teachers who will promote reform and improvement in schools;

**(F)** offering teacher preparation and certification programs for professional mathematicians, scientists, and engineers who wish to begin a career in teaching;

**(G)** developing tools to evaluate activities conducted under this subsection;

- (H) developing or adapting elementary school and secondary school mathematics and science curricular materials that incorporate contemporary research on the science of learning;
- (I) developing initiatives to increase and sustain the number, quality, and diversity of prekindergarten through grade 12 teachers of mathematics and science, including the use of induction programs, as defined in section 9813 (h) of title 20, for teachers in their first 2 years of teaching, especially in underserved areas;
- (J) using mathematicians, scientists, and engineers employed by private businesses to help recruit and train mathematics and science teachers;
- (K) developing science, technology, engineering, and mathematics educational programs and materials and conducting science, technology, engineering, and mathematics enrichment programs for students, including after-school programs and summer programs, with an emphasis on including and serving students described in subsection (b)(2)(G);
- (L) providing research opportunities in business or academia for students and teachers;
- (M) bringing mathematicians, scientists, and engineers from business and academia into elementary school and secondary school classrooms; and
- (N) any other activities the Director determines will accomplish the goals of this subsection.

#### **(4) Master teachers**

Activities carried out in accordance with paragraph (3)(E) shall—

- (A) emphasize the training of master teachers who will improve the instruction of mathematics or science in kindergarten through grade 12;
- (B) include training in both content and pedagogy; and
- (C) provide training only to teachers who will be granted sufficient nonclassroom time to serve as master teachers, as demonstrated by assurances their employing school has provided to the Director, in such time and such manner as the Director may require.

#### **(5) Science enrichment programs for girls**

Activities carried out in accordance with paragraph (3)(K) and (L) shall include elementary school and secondary school programs to encourage the ongoing interest of girls in science, mathematics, engineering, and technology and to prepare girls to pursue undergraduate and graduate degrees and careers in science, mathematics, engineering, or technology. Funds made available through awards to partnerships for the purposes of this paragraph may support programs for—

- (A) encouraging girls to pursue studies in science, mathematics, engineering, and technology and to major in such fields in postsecondary education;
- (B) tutoring girls in science, mathematics, engineering, and technology;
- (C) providing mentors for girls in person and through the Internet to support such girls in pursuing studies in science, mathematics, engineering, and technology;
- (D) educating the parents of girls about the difficulties faced by girls to maintain an interest and desire to achieve in science, mathematics, engineering, and technology, and enlisting the help of parents in overcoming these difficulties; and
- (E) acquainting girls with careers in science, mathematics, engineering, and technology and encouraging girls to plan for careers in such fields.

#### **(6) Research in secondary schools**

Activities carried out in accordance with paragraph (3)(K) may include support for research projects performed by students at secondary schools. Uses of funds made available through awards to partnerships for purposes of this paragraph may include—

- (A) training secondary school mathematics and science teachers in the design of research projects for students;

- (B) establishing a system for students and teachers involved in research projects funded under this subsection to exchange information about their projects and research results; and
- (C) assessing the educational value of the student research projects by such means as tracking the academic performance and choice of academic majors of students conducting research.

**(7) Stipends**

Grants awarded under this subsection may be used to provide stipends for teachers or students participating in training or research activities that would not be part of their typical classroom activities.

**(8) Mentors for teachers and students of challenging courses**

Partnerships carrying out activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses in accordance with paragraph (3)(B) shall encourage companies employing scientists, technologists, engineers, or mathematicians to provide mentors to teachers and students and provide for the coordination of such mentoring activities.

**(9) Innovation**

Activities carried out in accordance with paragraph (3)(H) may include the development and dissemination of curriculum tools that will help foster inventiveness and innovation.

**(10) Teacher institutes for the 21st century**

**(A) In general**

Teacher institutes for the 21st century carried out in accordance with paragraph (3)(B) shall—

- (i) be carried out in conjunction with a school served by the local educational agency in the partnership;
- (ii) be science, technology, engineering, and mathematics focused institutes that provide professional development to elementary school and secondary school teachers;
- (iii) serve teachers who—
  - (I) are considered highly qualified (as defined in section 9101 of the Elementary and Secondary Education Act of 1965 [20 U.S.C. 7801]);
  - (II) teach high-need subjects in science, technology, engineering, or mathematics; and
  - (III) teach in high-need schools (as described in section 1114(a)(1) of the Elementary and Secondary Education Act of 1965 [20 U.S.C. 6314 (a)(1)]);
- (iv) focus on the priorities developed by the Director in consultation with a broad group of relevant educational organizations;
- (v) be content-based and build on school year curricula that are experiment-oriented, content-based, and grounded in current research;
- (vi) ensure that the pedagogy component is designed around specific strategies that are relevant to teaching the subject and content on which teachers are being trained, which may include training teachers in the essential components of reading instruction for adolescents in order to improve student reading skills within the subject areas of science, technology, engineering, and mathematics;
- (vii) be a multiyear program that is conducted for a period of not less than 2 weeks per year;
- (viii) provide for direct interaction between participants in and faculty of the teacher institute;
- (ix) have a component that includes the use of the Internet;
- (x) provide for followup training in the classroom during the academic year for a period of not less than 3 days, which may or may not be consecutive, for participants in the

teacher institute, except that for teachers in rural local educational agencies, the followup training may be provided through the Internet;

(xi) provide teachers participating in the teacher institute with travel expense reimbursement and classroom materials related to the teacher institute, and may include providing stipends as necessary; and

(xii) establish a mechanism to provide supplemental support during the academic year for teacher institute participants to apply the knowledge and skills gained at the teacher institute.

**(B) Optional members of the partnership**

In addition to the partnership requirement under paragraph (2), an institution of higher education or eligible nonprofit organization (or consortium) desiring a grant for a teacher institute for the 21st century may also partner with a teacher organization, museum, or educational partnership organization.

**(b) Selection process**

**(1) Application**

An institution of higher education or an eligible nonprofit organization (or a consortium of such institutions or organizations) seeking funding under subsection (a) of this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum—

(A) a description of the partnership and the role that each member will play in implementing the proposal;

(B) a description of each of the activities to be carried out, including—

(i) how such activities will be aligned with State mathematics and science student academic achievement standards and with other activities that promote student achievement in mathematics and science;

(ii) how such activities will be based on a review of relevant research;

(iii) why such activities are expected to improve student performance and strengthen the quality of mathematics and science instruction; and

(iv) any activities that will encourage the interest of individuals identified in section 1885a or 1885b of this title in mathematics, science, engineering, and technology and will help prepare such individuals to pursue postsecondary studies in these fields;

(C) a description of the number, size, and nature of any stipends that will be provided to students or teachers and the reasons such stipends are needed;

(D) a description of how the partnership will serve as a catalyst for reform of mathematics and science education programs;

(E) a description of how the partnership will assess its success;

(F) a description of how the partnership will collaborate with the State educational agency to ensure that successful partnership activities may be replicated throughout the State; and

(G) a description of the manner in which the partnership will be continued after assistance under this section ends.

**(2) Review of applications**

In evaluating the applications submitted under paragraph (1), the Director shall consider, at a minimum—

(A) the ability of the partnership to carry out effectively the proposed programs;

(B) the extent to which the members of the partnership are committed to making the partnership a central organizational focus;

- (C) the degree to which activities carried out by the partnership are based on relevant research and are likely to result in increased student achievement;
- (D) the degree to which such activities are aligned with State mathematics and science student academic achievement standards;
- (E) the extent to which the evaluation described in paragraph (1)(E) will be independent and based on objective measures;
- (F) the likelihood that the partnership will demonstrate activities that can be widely implemented as part of larger scale reform efforts; and
- (G) the extent to which the activities will encourage the interest of individuals identified in section 1885a or 1885b of this title in mathematics, science, engineering, and technology and will help prepare such individuals to pursue postsecondary studies in these fields.

**(3) Awards**

In awarding grants under this section, the Director shall—

- (A) give priority to applications in which the partnership includes a high-need local educational agency or a high-need local educational agency in which at least one school does not make adequate yearly progress, as determined pursuant to part A of title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6311 et seq.); and
- (B) ensure that, to the extent practicable, a substantial number of the partnerships funded under this section include businesses.

**(c) Accountability and dissemination**

**(1) Assessment required**

The Director shall evaluate the program established under subsection (a) of this section. At a minimum, such evaluation shall—

- (A) use a common set of benchmarks and assessment tools to identify best practices and materials developed and demonstrated by the partnerships; and
- (B) to the extent practicable, compare the effectiveness of practices and materials developed and demonstrated by the partnerships authorized under this section with those of partnerships funded by other State or Federal agencies.

**(2) Report on evaluations**

Not later than 4 years after August 9, 2007, the Director shall transmit a report summarizing the evaluations required under subsection (b)(1)(E) of grants received under this program and describing any changes to the program recommended as a result of these evaluations to the Committee on Science and Technology and the Committee on Education and Labor of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate. Such report shall be made widely available to the public.

**(3) Annual meeting**

The Director, in consultation with the Secretary of Education, shall convene an annual meeting of the partnerships participating under this section to foster greater national collaboration.

**(4) Report on coordination**

The Director, in consultation with the Secretary of Education, shall provide an annual report to the Committee on Science of the House of Representatives, the Committee on Education and the Workforce of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Health, Education, Labor, and Pensions of the Senate describing how the program authorized under this section has been and will be coordinated with the program authorized under part B of title II of the Elementary and Secondary Education

*NB: This unofficial compilation of the U.S. Code is current as of Jan. 5, 2009 (see <http://www.law.cornell.edu/uscode/uscpri.html>).*

Act of 1965 [20 U.S.C. 6661 et seq.]. The report under this paragraph shall be submitted along with the President's annual budget request.

**(5) Technical assistance**

At the request of an eligible partnership or a State educational agency, the Director shall provide the partnership or agency with technical assistance in meeting any requirements of this section, including providing advice from experts on how to develop—

- (A) a quality application for a grant; and
- (B) quality activities from funds received from a grant under this section.

**(d) Definitions**

In this section—

- (1) the term “mathematics and science teacher” means a science, technology, engineering, or mathematics teacher at the elementary school or secondary school level; and
- (2) the term “science”, in the context of elementary and secondary education, includes technology and pre-engineering.

(Pub. L. 107–368, § 9, Dec. 19, 2002, 116 Stat. 3044; Pub. L. 110–69, title VII, §§ 7028, 7029, Aug. 9, 2007, 121 Stat. 696, 697.)

## References in Text

The Elementary and Secondary Education Act of 1965, referred to in subsecs. (b)(3)(A) and (c)(4), is Pub. L. 89–10, Apr. 11, 1965, 79 Stat. 27, as amended. Part A of title I of the Act is classified generally to part A (§ 6311 et seq.) of subchapter I of chapter 70 of Title 20, Education. Part B of title II of the Act is classified generally to part B (§ 6661 et seq.) of subchapter II of chapter 70 of Title 20. For complete classification of this Act to the Code, see Short Title note set out under section 6301 of Title 20 and Tables.

## Codification

Section was enacted as part of the National Science Foundation Authorization Act of 2002, and not as part of the National Science Foundation Act of 1950 which comprises this chapter.

## Amendments

2007—Subsec. (a)(2)(A). Pub. L. 110–69, § 7028(1), substituted “the department, college, or program of education at an institution of higher education, a State educational agency,” for “a State educational agency”.

Subsec. (a)(3)(B). Pub. L. 110–69, § 7028(2), added subpar. (B) and struck out former subpar. (B) which read as follows: “offering professional development programs, including summer or academic year institutes or workshops, designed to strengthen the capabilities of mathematics and science teachers;”.

Subsec. (a)(3)(C). Pub. L. 110–69, § 7028(3), inserted “and laboratory experiences” after “technology” and “and laboratory” after “provide technical”.

Subsec. (a)(3)(I). Pub. L. 110–69, § 7028(4), inserted “including the use of induction programs, as defined in section 9813 (h) of title 20, for teachers in their first 2 years of teaching,” after “and science,”.

Subsec. (a)(3)(K). Pub. L. 110–69, § 7028(5), added subpar. (K) and struck out former subpar. (K) which read as follows: “developing and offering mathematics or science enrichment programs for students, including after-school and summer programs;”.

Subsec. (a)(8), (9). Pub. L. 110–69, § 7028(6), added pars. (8) and (9).

Subsec. (a)(10). Pub. L. 110–69, § 7029, added par. (10).

Subsec. (b)(2)(E) to (G). Pub. L. 110–69, § 7028(7), added subpar. (E) and redesignated former subpars. (E) and (F) as (F) and (G), respectively.

Subsec. (c)(2). Pub. L. 110–69, § 7028(8), added par. (2) and struck out former par. (2). Prior to amendment, text of par. (2) read as follows:

NB: This unofficial compilation of the U.S. Code is current as of Jan. 5, 2009 (see <http://www.law.cornell.edu/uscode/uscprint.html>).

“(A) The results of the evaluation required under paragraph (1) shall be made available to the public and shall be provided to the Committee on Science of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Health, Education, Labor, and Pensions of the Senate.

“(B) Materials developed under the program established under subsection (a) of this section that are demonstrated to be effective shall be made widely available to the public.”

Subsec. (d). Pub. L. 110–69, § 7028(9), added subsec. (d).

### **Change of Name**

Committee on Science of House of Representatives changed to Committee on Science and Technology of House of Representatives by House Resolution No. 6, One Hundred Tenth Congress, Jan. 5, 2007.

Committee on Education and the Workforce of House of Representatives changed to Committee on Education and Labor of House of Representatives by House Resolution No. 6, One Hundred Tenth Congress, Jan. 5, 2007.

### **Findings**

Pub. L. 107–368, § 2, Dec. 19, 2002, 116 Stat. 3034, provided that: “Congress finds the following:

“(1) The National Science Foundation has made major contributions for more than 50 years to strengthen and sustain the Nation’s academic research enterprise that is the envy of the world.

“(2) The economic strength and national security of the United States and the quality of life of all Americans are grounded in the Nation’s scientific and technological capabilities.

“(3) The National Science Foundation carries out important functions in supporting basic research in all science and engineering disciplines and in supporting science, mathematics, engineering, and technology education at all levels.

“(4) The research and education activities of the National Science Foundation promote the discovery, integration, dissemination, and application of new knowledge in service to society and prepare future generations of scientists, mathematicians, and engineers who will be necessary to ensure America’s leadership in the global marketplace.

“(5) The National Science Foundation must be provided with sufficient resources to enable it to carry out its responsibilities to develop intellectual capital, strengthen the scientific infrastructure, integrate research and education, enhance the delivery of mathematics and science education in the United States, and improve the technological literacy of all people in the United States.

“(6) The emerging global economic, scientific, and technical environment challenges long-standing assumptions about domestic and international policy, requiring the National Science Foundation to play a more proactive role in sustaining the competitive advantage of the United States through superior research capabilities.

“(7) Commercial application of the results of Federal investment in basic and computing science is consistent with longstanding United States technology transfer policy and is a critical national priority, particularly with regard to cybersecurity and other homeland security applications, because of the urgent needs of commercial, academic, and individual users as well as the Federal and State Governments.”

### **Report on Foundation Budgetary and Programmatic Expansion**

Pub. L. 107–368, § 22, Dec. 19, 2002, 116 Stat. 3065, provided for a National Science Board report to address and examine specified issues concerning the National Science Foundation’s budgetary and programmatic growth provided for by Pub. L. 107–368 and to be submitted to certain Congressional committees within one year after Dec. 19, 2002.

### **Definitions**

Pub. L. 107–368, § 4, Dec. 19, 2002, 116 Stat. 3035, provided that: “In this Act [see Short Title of 2002 Amendment note set out under section 1861 of this title]:

“(1) Academic unit.—The term ‘academic unit’ means a department, division, institute, school, college, or other subcomponent of an institution of higher education.

“(2) Board.—The term ‘Board’ means the National Science Board established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

“(3) Community college.—The term ‘community college’ has the meaning given such term in section 3301(3) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7011 (3)).

“(4) Director.—The term ‘Director’ means the Director of the National Science Foundation established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

NB: This unofficial compilation of the U.S. Code is current as of Jan. 5, 2009 (see <http://www.law.cornell.edu/uscode/uscpri.html>).

“(5) Elementary school.—The term ‘elementary school’ has the meaning given that term by section 9101(18) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801 (18)).

“(6) Eligible nonprofit organization.—The term ‘eligible nonprofit organization’ means a nonprofit research institute, or a nonprofit professional association, with demonstrated experience and effectiveness in mathematics or science education as determined by the Director.

“(7) Foundation.—The term ‘Foundation’ means the National Science Foundation established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

“(8) High-need local educational agency.—The term ‘high-need local educational agency’ means a local educational agency that meets one or more of the following criteria:

“(A) It has at least one school in which 50 percent or more of the enrolled students are eligible for participation in the free and reduced price lunch program established by the Richard B. Russell National School Lunch Act (42 U.S.C. 1751 et seq.).

“(B) It has at least one school in which—

“(i) more than 34 percent of the academic classroom teachers at the secondary level (across all academic subjects) do not have an undergraduate degree with a major or minor in, or a graduate degree in, the academic field in which they teach the largest percentage of their classes; or

“(ii) more than 34 percent of the teachers in two of the academic departments do not have an undergraduate degree with a major or minor in, or a graduate degree in, the academic field in which they teach the largest percentage of their classes.

“(C) It has at least one school whose teacher attrition rate has been 15 percent or more over the last three school years.

“(9) Institution of higher education.—The term ‘institution of higher education’ has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001 (a)).

“(10) Local educational agency.—The term ‘local educational agency’ has the meaning given such term by section 9101(26) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801 (26)).

“(11) Master teacher.—The term ‘master teacher’ means a mathematics or science teacher who works to improve the instruction of mathematics or science in kindergarten through grade 12 through—

“(A) participating in the development or revision of science, mathematics, engineering, or technology curricula;

“(B) serving as a mentor to mathematics or science teachers;

“(C) coordinating and assisting teachers in the use of hands-on inquiry materials, equipment, and supplies, and when appropriate, supervising acquisition and repair of such materials;

“(D) providing in-classroom teaching assistance to mathematics or science teachers; and

“(E) providing professional development, including for the purposes of training other master teachers, to mathematics and science teachers.

“(12) National research facility.—The term ‘national research facility’ means a research facility funded by the Foundation which is available, subject to appropriate policies allocating access, for use by all scientists and engineers affiliated with research institutions located in the United States.

“(13) Secondary school.—The term ‘secondary school’ has the meaning given that term by section 9101(38) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801 (38)).

“(14) State.—Except with respect to the Experimental Program to Stimulate Competitive Research, the term ‘State’ means one of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or any other territory or possession of the United States.

“(15) State educational agency.—The term ‘State educational agency’ has the meaning given such term by section 9101(41) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801 (41)).

“(16) United states.—The term ‘United States’ means the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.”