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REPORT
110–85

10,000 TEACHERS, 10 MILLION MINDS SCIENCE AND MATH SCHOLARSHIP ACT

APRIL 16, 2007.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. GORDON of Tennessee, from the Committee on Science and Technology, submitted the following

R E P O R T

[To accompany H.R. 362]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 362) to authorize science scholarships for educating mathematics and science teachers, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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59–006

I. AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. TABLE OF CONTENTS.

The table of contents for this Act is as follows:

Sec. 1. Table of contents.
Sec. 2. Findings.
Sec. 3. Definitions.

TITLE I—SCIENCE SCHOLARSHIPS

Sec. 101. Short title.
Sec. 102. Findings.
Sec. 103. Policy objective.
Sec. 104. Robert Noyce Teacher Scholarship Program.

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

Sec. 201. Mathematics and science education partnerships amendments.
Sec. 202. Teacher institutes.
Sec. 203. Graduate degree program.
Sec. 204. Curricular materials.
Sec. 205. Science, Technology, Engineering, and Mathematics Talent Expansion Program.
Sec. 206. High-need local educational agency definition.
Sec. 207. Teacher leaders.
Sec. 208. Laboratory science pilot program.
Sec. 209. Study on laboratory equipment donations for schools.

SEC. 2. FINDINGS.

Congress finds the following:

(1) The National Science Foundation has made significant and valuable contributions to the improvement of K–12 and undergraduate science, technology, engineering, and mathematics education throughout its 56 year history.

(2) Under section 3 of the National Science Foundation Act of 1950 (42 U.S.C. 1862), the National Science Foundation is explicitly required to strengthen science, mathematics, and engineering research potential and education programs at all levels.

SEC. 3. DEFINITIONS.

In this Act:

(1) The term "cost of attendance" has the meaning given that term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll).

(2) The term "Director" means the Director of the National Science Foundation.

(3) The term "institution of higher education" has the meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) The term "mathematics and science teacher" means a mathematics, science, or technology teacher at the elementary school or secondary school level.

TITLE I—SCIENCE SCHOLARSHIPS

SEC. 101. SHORT TITLE.

This title may be cited as the "10,000 Teachers, 10 Million Minds Science and Math Scholarship Act".

SEC. 102. FINDINGS.

Congress finds the following:

(1) The prosperity the United States enjoys today is due in no small part to investments the Nation has made in research and development over the past 50 years.

(2) Corporate, government, and national scientific and technical leaders have raised concerns that current trends affecting the science and technology enterprise of the Nation could result in erosion of this past success and jeopardize future prosperity.

(3) The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine were tasked in a congressional request to recommend actions that the Federal Government could take to enhance the science and technology enterprise so that the United States can successfully compete, prosper, and be secure in the global community of the 21st century.

(4) The Academies' highest priority recommendation in its report, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter

Economic Future", is to improve K–12 mathematics and science education, and the Academies' first recommended action item is to institute a major scholarship program to recruit and educate annually 10,000 mathematics and science teachers.

SEC. 103. POLICY OBJECTIVE.

In carrying out the program under section 104, the National Science Foundation shall seek to increase by up to 10,000 per year the number of elementary and secondary mathematics and science teachers in the Nation's schools having both exemplary subject knowledge and pedagogical skills.

SEC. 104. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.

(a) PROGRAM AMENDMENTS.—Section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1) is amended—

(1) by inserting "teacher" after "noyce" in the section heading;

(2) in subsection (a)(1)—

(A) by striking "to provide scholarships, stipends, and programming designed";

(B) by inserting "and to provide scholarships and stipends to students participating in the program" after "science teachers"; and

(C) by inserting "Teacher" after "Noyce";

(3) in subsection (a)(3)(A)—

(A) by striking "encourage top college juniors and seniors" and inserting "recruit and prepare undergraduate students"; and

(B) by inserting "qualified as" after "to become";

(4) in subsection (a)(3)(A)(ii)—

(A) by striking "programs to help scholarship recipients" and inserting "academic courses and early field teaching experiences designed to prepare students participating in the program";

(B) by striking "programs that will result in" and inserting "such preparation as is necessary to meet requirements for"; and

(C) by striking "licensing; and" and inserting "licensing;";

(5) in subsection (a)(3)(A)(iii)—

(A) by striking "scholarship recipients" and inserting "students participating in the program";

(B) by striking "enable the recipients" and inserting "enable the students"; and

(C) by striking "; or" and inserting "; and";

(6) in subsection (a)(3)(A) by inserting at the end the following new clause:

"(iv) providing summer internships for freshman students participating in the program; or";

(7) in subsection (a)(3)(B)—

(A) by striking "encourage" and inserting "recruit and prepare"; and

(B) by inserting "qualified as" after "to become";

(8) by amending clause (ii) of subsection (a)(3)(B) to read as follows:

"(ii) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing; and";

(9) in subsection (a) by inserting at the end the following new paragraph:

"(4) ELIGIBILITY REQUIREMENT.—To be eligible for an award under this section, an institution of higher education (or consortia of such institutions) shall ensure that specific faculty members and staff from the institution's mathematics, science, or engineering departments and specific education faculty are designated to carry out the development and implementation of the program. An institution of higher education may also include teacher leaders to participate in developing the pedagogical content of the program and to supervise students participating in the program in their field teaching experiences. No institution of higher education shall be eligible for an award unless faculty from the institution's mathematics, science, or engineering departments are active participants in the program.";

(10) in subsection (b)(1)(A)—

(A) by striking "scholarship or stipend";

(B) by inserting "and summer internships" after "number of scholarships"; and

(C) by inserting "the type of activities proposed for the recruitment of students to the program," after "intends to award,";

(11) in subsection (b)(1)(B)—

(A) by striking "scholarship or stipend"; and

(B) by striking "; and" and inserting ", which may include a description of any existing programs at the applicant's institution that are targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;";

(12) in subsection (b)(1), by striking subparagraph (C) and inserting the following:

"(C) a description of the academic courses and field teaching experiences required under subsection (a)(3)(A)(ii) and (B)(ii), including—

"(i) a description of the undergraduate program that will enable a student to graduate within 5 years with a major in mathematics, science, or engineering and to obtain teacher certification or licensing;

"(ii) a description of the field teaching experiences proposed; and

"(iii) evidence of agreements between the applicant and the schools or school districts that are identified as the locations at which field teaching experiences will occur;

"(D) a description of the programs required under subsection (a)(3)(A)(iii) and (B)(iii), including activities to assist new teachers in fulfilling their service requirements under this section; and

"(E) an identification of the applicant's mathematics, science, or engineering faculty and its education faculty who will carry out the development and implementation of the program as required under subsection (a)(4).";

(13) in subsection (b)(2)—

(A) by redesignating subparagraphs (B), (C), (D), and (E) as subparagraphs (C), (D), (E) and (F), respectively;

(B) by inserting after subparagraph (A) a new subparagraph as follows:

"(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics, science, and technology effectively in elementary and secondary schools;"; and

(C) by amending subparagraph (F), as so redesignated by subparagraph (A) of this paragraph, to read as follows:

"(F) the ability of the applicant to recruit students who are individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).";

(14) in subsection (c)(1)(B), by striking "2 years" and inserting "3 years";

(15) in subsection (c)(3)—

(A) by striking "$7,500" and inserting "$10,000"; and

(B) by striking "2 years of scholarship support" and inserting "3 years of scholarship support, unless the Director establishes a policy by which part-time students may receive additional years of support";

(16) in subsection (c)(4)—

(A) by striking "6 years" and inserting "8 years";

(B) by inserting ", with a maximum service requirement of 6 years" after "was received"; and

(C) by striking "Service required under this paragraph shall be performed in a high-need local educational agency.";

(17) in subsection (c), by adding at the end a new paragraph as follows:

"(5) EXCEPTION.—The period of service obligation under paragraph (4) is reduced by 1 year for scholarship recipients whose service is performed in a high-need local educational agency.";

(18) in subsection (d)(1), by striking "to receive certification or licensing to teach" and inserting "established under subsection (a)(3)(B)";

(19) in subsection (d)(2), by inserting "and professional achievement" after "academic merit";

(20) in subsection (d)(3), by striking "1 year" and inserting "16 months";

(21) in subsection (d)(4)—

(A) by striking "6 years" and inserting "4 years"; and

(B) by striking "for each year a stipend was received";

(22) in subsection (g)(2)(A)—

(A) by striking "Treasurer of the United States," and inserting "Treasurer of the United States."; and

(B) by striking "multiplied by 2.";

(23) in subsection (i)(3), by inserting "or had a career in" after "is working in";

(24) in subsection (i)—

(A) by striking "and" at the end of paragraph (4);

(B) by striking the period at the end of paragraph (5) and inserting "; and"; and

(C) by adding at the end the following:

"(6) the term 'teacher leader' 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, for the purposes of training other teacher leaders, to mathematics and science teachers."; and

(25) by adding at the end the following:

"(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950, the Director is authorized to accept donations from the private sector to support scholarships, stipends, or internships associated with programs under this section.

"(k) ASSESSMENT OF TEACHER SERVICE AND RETENTION.—Not later than 4 years after the date of enactment of this subsection, the Director shall transmit to Congress a report on the effectiveness of the program carried out under this section. The report shall include the proportion of individuals receiving scholarships or stipends under the program who —

"(1) fulfill their service obligation required under this section in a high-need local educational agency;

"(2) elect to fulfill their service obligation in a high-need local educational agency but fail to complete it, as defined in subsection (g);

"(3) remain in the teaching profession beyond their service obligation; and

"(4) remain in the teaching profession in a high-need local educational agency beyond their service obligation.

"(l) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director for the Robert Noyce Teacher Scholarship Program—

"(1) $70,000,000 for fiscal year 2008;

"(2) $101,000,000 for fiscal year 2009;

"(3) $133,000,000 for fiscal year 2010;

"(4) $164,000,000 for fiscal year 2011; and

"(5) $196,000,000 for fiscal year 2012.".

(b) CONFORMING AMENDMENT.—Section 8(6) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in the paragraph heading by inserting "TEACHER" after "NOYCE"; and

(2) by inserting "Teacher" after "Noyce".

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

SEC. 201. MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS AMENDMENTS.

Section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n) is amended—

(1) in subsection (a)(2)—

(A) by striking "(A)";

(B) by striking subparagraph (B);

(C) by inserting ", through 1 or more of its departments in science, mathematics, or engineering," after "institution of higher education"; and

(D) by striking "a State educational agency" and inserting "education faculty from the participating institution or institutions of higher education, a State educational agency,";

(2) in subsection (a)(3)(B)—

(A) by inserting "content-specific" before "professional development programs";

(B) by inserting "which are" before "designed"; and

(C) by inserting "and which may include teacher training activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses, including Advanced Placement and International Baccalaureate courses" after "and science teachers";

(3) in subsection (a)(3)(C)—

(A) by inserting "and laboratory experiences" after "technology"; and

(B) by inserting "and laboratory" after "provide technical";

(4) in subsection (a)(3)(I) by inserting "including model induction programs for teachers in their first 2 years of teaching," after "and science,";

(5) in subsection (a)(3)(K) by striking "developing and offering mathematics or science enrichment programs for students, including after-school and summer programs;" and inserting "developing educational programs and materials and conducting mathematics, science, and technology enrichment programs for students, including after-school programs and summer camps for students described in subsection (b)(2)(G);";

(6) in subsection (a) by inserting at the end the following:

"(8) MASTER'S DEGREE PROGRAMS.—Activities carried out in accordance with paragraph (3)(B) shall include the development and offering of master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills, as described in section 203 of the Act enacting this paragraph. Grants provided under this section may be used to develop and implement courses of instruction for the master's degree programs, which may involve online learning, and develop related educational materials.

"(9) 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, including Advanced Placement and International Baccalaureate courses, in accordance with paragraph (3)(B) shall encourage companies employing scientists, mathematicians, or engineers to provide mentors to teachers and students and provide for the coordination of such mentoring activities.

"(10) INVENTIVENESS.—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.";

(7) in subsection (b)(2) by redesignating subparagraphs (E) and (F) as subparagraphs (F) and (G), respectively, and inserting after subparagraph (D) the following new subparagraph:

"(E) the extent to which the evaluation described in paragraph (1)(E) will be independent and based on objective measures;";

(8) in subsection (b) by inserting at the end the following:

"(4) MINIMUM AND MAXIMUM GRANT SIZE.—A grant awarded under this section shall be not less than $75,000 or greater than $2,000,000 for any fiscal year.";

(9) in subsection (c)—

(A) by striking paragraph (2);

(B) by redesignating paragraphs (3), (4), and (5) as paragraphs (4), (5), and (6), respectively; and

(C) by inserting after paragraph (1) the following new paragraphs:

"(2) REPORT ON MODEL PROJECTS.—The Director shall determine which completed projects funded through the program under this section should be seen as models to be replicated on a more expansive basis at the State or national levels. Not later than 1 year after the date of enactment of this paragraph, the Director shall transmit a report describing the results of this study 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.

"(3) REPORT ON EVALUATIONS.—Not later than 4 years after the date of enactment of this paragraph, 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."; and

(10) by adding at the end the following new subsection:

"(d) DEFINITIONS.—In this section—

"(1) the term 'mathematics and science teacher' means a mathematics, science, or technology 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.".

SEC. 202. TEACHER INSTITUTES.

(a) NATIONAL SCIENCE FOUNDATION INSTITUTES.—

(1) IN GENERAL.—The Director shall establish a grant program to provide for summer or academic year teacher institutes or workshops authorized by section 9(a)(3)(B) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(3)(B)) and shall allow grantees under the Teacher Institutes for the 21st Century program to operate 1 to 2 week summer teacher institutes with the goal of reaching the maximum number of in-service mathematics and science teachers, particularly elementary and middle school teachers, to improve their content knowledge and pedagogical skills.

(2) PREPARATION TO TEACH CHALLENGING COURSES.—The Director shall ensure that activities supported for awards under paragraph (1) include the development and implementation of teacher training activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses, including Advanced Placement and International Baccalaureate courses.

(3) AWARDS.—In awarding grants under this section, the Director shall give priority to applications that propose programs that will attract mathematics and science teachers from local educational agencies that—

(A) are receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq) as a result of having within their jurisdictions concentrations of children from low income families; and

(B) are experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or technology.

(4) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section, $32,000,000 for fiscal year 2008, $35,200,000 for fiscal year 2009, $38,700,000 for fiscal year 2010, $42,600,000 for fiscal year 2011, and $46,800,000 for fiscal year 2012.

(b) LABORATORY SCIENCE TEACHER PROFESSIONAL DEVELOPMENT.—There are authorized to be appropriated to the Secretary of Energy for the Laboratory Science Teacher Professional Development program, $3,000,000 for fiscal year 2008, $8,000,000 for fiscal year 2009, $10,000,000 for fiscal year 2010, $10,000,000 for fiscal year 2011, and $10,000,000 for fiscal year 2012.

SEC. 203. GRADUATE DEGREE PROGRAM.

(a) IN GENERAL.—The Director shall ensure that master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills are instituted in accordance with section 9(a)(8) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(8)). The degree programs shall be designed for current teachers, who will enroll as part-time students, and to allow participants to obtain master's degrees within a period of 3 years.

(b) DISTRIBUTION OF AWARDS.—The Director shall, in awarding grants to carry out subsection (a), consider the distribution of awards among institutions of higher education of different sizes and geographic locations.

(c) PROGRAM ACTIVITIES.—Activities supported through master's degree programs established under subsection (a) may include—

(1) development of courses of instruction and related educational materials;

(2) stipends to defray the cost of attendance for students in the degree program; and

(3) acquisition of computer and networking equipment needed for online instruction under the degree program.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section $46,000,000 for fiscal year 2008, $50,600,000 for fiscal year 2009, $55,700,000 for fiscal year 2010, $61,200,000 for fiscal year 2011, and $67,300,000 for fiscal year 2012.

SEC. 204. CURRICULAR MATERIALS.

The Director, in consultation with the Secretary of Education, shall convene a national panel of experts on mathematics and science education to identify and collect K–12 mathematics, science, and technology teaching materials that have been demonstrated to be effective and to recommend the development of new materials in areas where effective materials do not exist. The Director and Secretary shall develop ways to disseminate effective materials and support efforts to develop new materials, in accordance with the recommendations of the national panel. Recommendations made under this section shall not be considered a mandate of specific K–12 curricula.

SEC. 205. SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS TALENT EXPANSION PROGRAM.

(a) AMENDMENTS.—Section 8(7) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in subparagraph (A) by striking "competitive, merit-based" and all that follows through "in recent years." and inserting "competitive, merit-reviewed multiyear grants for eligible applicants to improve undergraduate education in science, mathematics, engineering, and technology through—

"(i) the creation of programs to increase the number of students studying toward and completing associate's or bachelor's degrees in science, technology, engineering, and mathematics, particularly in fields that have faced declining enrollment in recent years; and

"(ii) the creation of centers (in this paragraph referred to as 'Centers') to develop undergraduate curriculum, teaching methods for undergraduate courses, and methods to better train professors and teaching assistants who teach undergraduate courses to increase the number of students completing undergraduate courses in science, technology, engineering, and mathematics, including the number of nonmajors, and to improve student academic achievement in those courses.

Grants made under clause (ii) shall be awarded jointly through the Education and Human Resources Directorate and at least 1 research directorate of the Foundation.";

(2) by amending subparagraph (B) to read as follows:

"(B) In selecting projects under subparagraph (A)(i), the Director shall strive to increase the number of students studying toward and completing baccalaureate degrees, concentrations, or certificates in science, mathematics, engineering, or technology who are—

"(i) individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b); or

"(ii) graduates of a secondary school that is administered by a local educational agency that is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq) as a result of having within its jurisdiction concentrations of children from low income families.";

(3) in subparagraph (C)—

(A) by inserting "(i)" before "The types of";

(B) by redesignating clauses (i) through (vi) as subclauses (I) through (VI), respectively;

(C) by striking "under this paragraph" and inserting "under subparagraph (A)(i)"; and

(D) by adding at the end the following new clause:

"(ii) The types of activities the Foundation may support under subparagraph (A)(ii) include—

"(I) creating model curricula and laboratory programs;

"(II) developing and demonstrating research-based instructional methods and technologies;

"(III) developing methods to train graduate students and faculty to be more effective teachers of undergraduates;

"(IV) conducting programs to disseminate curricula, instructional methods, or training methods to faculty at the grantee institutions and at other institutions;

"(V) conducting assessments of the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii); and

"(VI) conducting any other activities the Director determines will accomplish the goals described in subparagraph (A)(ii).";

(4) in subparagraph (D)(i), by striking "under this paragraph" and inserting "under subparagraph (A)(i)";

(5) in subparagraph (D)(ii), by striking "under this paragraph" and inserting "under subparagraph (A)(i)";

(6) after subparagraph (D)(iii), by adding at the end the following new clause:

"(iv) A grant under subparagraph (A)(ii) shall be awarded for 5 years, and the Director may extend such a grant for up to 2 additional 3 year periods.";

(7) in subparagraph (E), by striking "under this paragraph" both places it appears and inserting "under subparagraph (A)(i)";

(8) by redesignating subparagraph (F) as subparagraph (J); and

(9) by inserting after subparagraph (E) the following new subparagraphs:

"(F) Grants awarded under subparagraph (A)(ii) shall be carried out by a department or departments of science, mathematics, or engineering at institutions of higher education (or a consortia thereof), which may partner with education

faculty. Applications for awards under subparagraph (A)(ii) shall be submitted to the Director at such time, in such manner, and containing such information as the Director may require. At a minimum, the application shall include—

"(i) a description of the activities to be carried out by the Center;

"(ii) a plan for disseminating programs related to the activities carried out by the Center to faculty at the grantee institution and at other institutions;

"(iii) an estimate of the number of faculty, graduate students (if any), and undergraduate students who will be affected by the activities carried out by the Center; and

"(iv) a plan for assessing the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii).

"(G) In evaluating the applications submitted under subparagraph (F), the Director shall consider, at a minimum—

"(i) the ability of the applicant to effectively carry out the proposed activities, including the dissemination activities described in subparagraph (C)(ii)(IV); and

"(ii) the extent to which the faculty, staff, and administrators of the applicant institution are committed to improving undergraduate science, mathematics, and engineering education.

"(H) In awarding grants under subparagraph (A)(ii), the Director shall endeavor to ensure that a wide variety of science, technology, engineering, and mathematics fields and types of institutions of higher education, including 2-year colleges and minority-serving institutions, are covered, and that—

"(i) at least 1 Center is housed at a Doctoral/Research University as defined by the Carnegie Foundation for the Advancement of Teaching; and

"(ii) at least 1 Center is focused on improving undergraduate education in an interdisciplinary area.

"(I) The Director shall convene an annual meeting of the awardees under this paragraph to foster collaboration and to disseminate the results of the Centers and the other activities funded under this paragraph.".

(b) REPORT ON DATA COLLECTION.—Not later than 180 days after the date of enactment of this Act, the Director shall transmit to Congress a report on how the Director is determining whether current grant recipients in the Science, Technology, Engineering, and Mathematics Talent Expansion Program are making satisfactory progress as required by section 8(7)(D)(ii) of the National Science Foundation Authorization Act of 2002 and what funding actions have been taken as a result of the Director's determinations.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the program described in paragraph (7) of section 8 of the National Science Foundation Authorization Act of 2002—

(1) $44,000,000 for fiscal year 2008, of which $4,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(2) $55,000,000 for fiscal year 2009, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(3) $60,000,000 for fiscal year 2010, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(4) $60,000,000 for fiscal year 2011, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph; and

(5) $60,000,000 for fiscal year 2012, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph.

SEC. 206. HIGH-NEED LOCAL EDUCATIONAL AGENCY DEFINITION.

Section 4(8) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n note) is amended to read as follows:

"(8) HIGH-NEED LOCAL EDUCATIONAL AGENCY.—The term 'high-need local educational agency' means a local educational agency that—

"(A) is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq) as a result of having within its jurisdiction concentrations of children from low income families; and

"(B) is experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or engineering.".

SEC. 207. TEACHER LEADERS.

The National Science Foundation Authorization Act of 2002 is amended—

(1) in section 4(11)—

(A) by striking "MASTER TEACHER" and inserting "TEACHER LEADER";

(B) by striking "master teacher" and inserting "teacher leader"; and

(C) in subparagraph (E), by striking "master teachers" and inserting "teacher leaders"; and

(2) in section 9—

(A) in subsection (a)(3)(E), by striking "master teachers" and inserting "teacher leaders"; and

(B) in subsection (a)(4)—

(i) by striking "MASTER TEACHERS" and inserting "TEACHER LEADERS"; and

(ii) by striking "master teachers" each place it appears and inserting "teacher leaders".

SEC. 208. LABORATORY SCIENCE PILOT PROGRAM.

(a) FINDINGS.—The Congress finds the following:

(1) To remain competitive in science and technology in the global economy, the United States must increase the number of students graduating from high school prepared to pursue postsecondary education in science, technology, engineering, and mathematics.

(2) There is broad agreement in the scientific community that learning science requires direct involvement by students in scientific inquiry and that laboratory experience is so integral to the nature of science that it must be included in every science program for every science student.

(3) In America's Lab Report, the National Research Council concluded that the current quality of laboratory experiences is poor for most students and that educators and researchers do not agree on how to define high school science laboratories or on their purpose, hampering the accumulation of research on how to improve labs.

(4) The National Research Council found that schools with higher concentrations of non-Asian minorities and schools with higher concentrations of poor students are less likely to have adequate laboratory facilities than other schools.

(5) The Government Accountability Office reported that 49.1 percent of schools where the minority student population is greater than 50.5 percent reported not meeting functional requirements for laboratory science well or at all.

(6) 40 percent of those college students who left the science fields reported some problems related to high school science preparation, including lack of laboratory experience and no introduction to theoretical or to analytical modes of thought.

(7) It is in the national interest for the Federal Government to invest in research and demonstration projects to improve the teaching of laboratory science in the Nation's high schools.

(b) GRANT PROGRAM.—Section 8(8) of the National Science Foundation Authorization Act of 2002 is amended—

(1) by redesignating subparagraphs (A) through (F) as clauses (i) through (vi), respectively;

(2) by inserting "(A)" before "A program of competitive"; and

(3) by inserting at the end the following new subparagraphs:

"(B) In accordance with subparagraph (A)(v), the Director shall establish a research pilot program designated as 'Partnerships for Access to Laboratory Science' to award grants to partnerships to improve laboratories and provide instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level. Grants under this subparagraph may be used for—

"(i) purchase, rental, or leasing of equipment, instrumentation, and other scientific educational materials;

"(ii) maintenance, renovation, and improvement of laboratory facilities;

"(iii) development of instructional programs designed to integrate the laboratory experience with classroom instruction and to be consistent with State mathematics and science academic achievement standards;

"(iv) training in laboratory safety for school personnel;

"(v) design and implementation of hands-on laboratory experiences to encourage the interest of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in mathematics, science, engineering, and technology and help prepare such individuals to pursue postsecondary studies in these fields; and

"(vi) assessment of the activities funded under this subparagraph.

"(C) Grants may be made under subparagraph (B) only to a partnership—

"(i) for a project that includes significant teacher training and professional development components; or

"(ii) that establishes that appropriate teacher training and professional development is being addressed, or has been addressed, through other means.

"(D) Grants awarded under subparagraph (B) shall be to a partnership that—

"(i) includes an institution of higher education or a community college;

"(ii) includes a high-need local educational agency;

"(iii) includes a business or eligible nonprofit organization; and

"(iv) may include a State educational agency, other public agency, National Laboratory, or community-based organization.

"(E) The Federal share of the cost of activities carried out using amounts from a grant under subparagraph (B) shall not exceed 50 percent.

"(F) The Director shall require grant recipients to submit a report to the Director on the results of the project supported by the grant.".

(c) REPORT.—The Director shall evaluate the effectiveness of activities carried out under the research pilot projects funded by the grant program established pursuant to the amendment made by subsection (b) in improving student performance in mathematics, science, engineering, and technology. A report documenting the results of that evaluation shall be submitted to the Committee on Science and Technology of the House of Representatives and the Committees on Commerce, Science, and Transportation and on Health, Education, Labor, and Pensions of the Senate not later than 5 years after the date of enactment of this Act. The report shall identify best practices and materials developed and demonstrated by grant awardees.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this section and the amendments made by this section $5,000,000 for fiscal year 2008, and such sums as may be necessary for each of the 3 succeeding fiscal years.

SEC. 209. STUDY ON LABORATORY EQUIPMENT DONATIONS FOR SCHOOLS.

Not later than 2 years after the date of enactment of this Act, the Director shall transmit a report to the Congress examining the extent to which institutions of higher education are donating used laboratory equipment to elementary and secondary schools. The Director, in consultation with the Secretary of Education, shall survey institutions of higher education to determine—

(1) how often, how much, and what type of equipment is donated;

(2) what criteria or guidelines the institutions are using to determine what types of equipment can be donated, what condition the equipment should be in, and which schools receive the equipment;

(3) whether the institutions provide any support to, or follow-up with the schools; and

(4) how appropriate donations can be encouraged.

II. PURPOSE

The purpose of the bill is to improve K–12 mathematics, science, and technology education through recruitment, training, mentoring, and professional development of teachers, to improve laboratory experiences in secondary schools, and to increase the number of undergraduates entering science, technology, engineering, and mathematics (STEM) fields.

III. BACKGROUND AND NEED FOR THE LEGISLATION

In 1995, the first Trends in International Math and Science Study (TIMSS) reported alarming data regarding American student achievement in mathematics and science.

American twelfth-graders ranked behind comparable students from 17 other countries out of 21 countries in the study. Of the 16 of those countries that participated in an analysis of achievement in physics, the United States ranked last. Follow-up TIMSS studies and Programme for International Student Assessment (PISA) studies have confirmed that American students are behind their peers from many other industrialized nations. For example, in the comprehensive 2003 PISA study, the United States ranked 28th out of 40 countries in mathematics achievement of 15-year-old students. Several recent reports have concluded that improving the math and

science achievement of American students is critical to the vision of a competitive America continuing to lead the world in technology and innovation. In particular, the National Academies 2007 report Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future (Gathering Storm) identifies the following as its highest priority policy recommendation:

Increase America's talent pool by vastly improving K–12 science and mathematics education.

Other reports echoing this same sentiment have come from the National Commission on Mathematics and Science Teaching for the 21st Century (the Glenn Commission), the Council on Competitiveness, the Association of American Universities (AAU), the President's Council of Advisors on Science and Technology, AeA (formerly the American Electronics Association), the Business Roundtable, the Electronic Industries Alliance, the National Association of Manufacturers, and TechNet.

Having a leading science and technology enterprise is not just a matter of national prestige. Science and technology is largely responsible for the innovation that drove the American economic dominance of the last half of the twentieth century and that led to high-paying jobs and a high standard of living. But the last decade or two has seen a narrowing of the U.S. lead in these areas, and the "gathering storm" in the title of the National Academies report is a reference to the decline of American technological leadership. High-tech jobs are moving off-shore, historic giants of American industry are in decline, and the U.S. has become a net importer of high-tech products.

To rise above this gathering storm, the Academies report advocates for a major investment in the nation's competitiveness. In addition to improving K–12 science and mathematics education, the report recommends investing in scientific and engineering research, recruiting and retaining the best scientists and engineers in the world, and improving the innovation climate for industry.

The Gathering Storm report identifies specific action items to accomplish the general recommendations. Among them are to annually recruit 10,000 science and mathematics teachers by awarding scholarships, to strengthen the skills of 250,000 teachers through summer institutes and master's degree programs, and to increase the number of U.S. citizens who earn bachelor's degrees in STEM fields by providing 25,000 scholarships every year. The principal provisions of this Act work towards the implementation of these three action items.

IV. Hearing Summary

On Tuesday, March 13, 2007, the Committee on Science and Technology held a hearing on Science and Technology Leadership in a 21st Century Global Economy. The witnesses were Mr. Norman R. Augustine, retired Chairman and CEO of the Lockheed Martin Corporation and chair of the National Academies committee that wrote the Gathering Storm report; Mr. Harold McGraw III, Chairman and CEO of the McGraw-Hill Companies and Chair of the Business Roundtable; Dr. Robert Dynes, President of the University of California; Dr. Craig Barrett, Chairman of the Board of the Intel Corporation; Dr. Neal Lane, Professor of Physics at Rice University and former Director of the National Science Foundation;

and Ms. Deborah Wince-Smith, President of the Council on Competitiveness. The witnesses were asked to explain why the promotion of science and technology is so critical to America's prosperity. In particular, they were asked to address H.R. 362, H.R. 363, and the connection between these bills and the recommendations of the Gathering Storm report.

These witnesses represent a broad cross-section of academic, government, and business leadership. Their testimony emphasized how support of K–12 education in math and science is critical to developing the technical workforce that a competitive nation demands. They also emphasized how the entire science and technology enterprise supports innovation that is needed to produce high-paying jobs and a high standard of living. Members of the committee asked the panelists to comment on

- why the emphasis within the education programs is on teachers;
- how our economy can produce high-paying jobs;
- the role of NSF in federal STEM education programs;
- whether our culture needs changing to improve attitudes about education;
- whether funds for physical science research should come from other disciplines;
- what we need to do to make teaching a more attractive profession; and
- how to entice industry into funding education programs.

All the witnesses expressed their support for H.R. 362.

V. Committee Actions

On January 10, 2007, Rep. Bart Gordon and Rep. Ralph Hall, Chairman and Ranking Minority Member of the Committee on Science and Technology, introduced H.R. 362, which includes the "10,000 Teachers, 10 Million Minds Science and Math Scholarship Act". The purpose of the bill is to improve K–12 STEM education through recruitment, training, mentoring, and professional development of teachers. Many of the provisions in the bill are closely related to provisions in H.R. 5358, which was ordered reported by the Committee during the 109th Congress.

The full Committee on Science and Technology met on Wednesday, March 28, 2007, to consider the bill. Mr. Gordon and Mr. Hall offered an amendment in the nature of a substitute that clarifies language in several places and that

- inserts "technology" in all references to K–12 science and mathematics education;
- allows Noyce Program scholarship recipients to complete their program within 5 years, rather than in 4 years;
- for review of applications under the Noyce program, adds the requirement for NSF to consider the ability of the applicant to attract women and minority students;
- revises Noyce program reporting requirements to track involvement of participants in high-need schools;
- provides a single authorization of appropriations for each year of the Noyce program (removes floors and ceilings for "capacity building activities");
- replaces references to Advanced Placement (AP) and International Baccalaureate (IB) courses with "challenging math,

science, and technology college-preparatory courses, including AP and IB courses";

• allows part-time master's degree programs to cover 3 years, rather than being limited to 2 years;

• redefines "high-need local education agency" to be one in which there is a concentration of children from low-income families and a shortage of highly qualified teachers; and

• replaces the term "master teacher" with the term "teacher leader".

By unanimous consent, the Committee agreed to treat this amendment in the nature of a substitute as original text for purposes of amendment.

Ms. Johnson and Mr. Ehlers offered an amendment to establish a pilot research program at NSF to fund partnerships between universities, businesses, and high-need schools for the purpose of determining how to improve laboratory science in secondary schools. Grants funded under this program:

• must have a one-to-one cost sharing from non-federal sources;

• must provide for teacher training and professional development in the effective use of laboratories; and

• may be used for acquisition or maintenance of instrumentation and equipment and the development of instructional programs.

The amendment was adopted by a voice vote.

Ms. Johnson offered an amendment to specify that NSF, in attempting to provide STEM Talent Expansion Program (STEP) grants at a wide variety of types of institutions of higher education, include minority-serving institutions in these attempts. The amendment was adopted by a voice vote.

Ms. Giffords offered an amendment to require that NSF attempt to increase the number of STEP grants that involve projects that are designed to attract students who have graduated from secondary schools having a concentration of students from low-income families. The amendment was adopted by a voice vote.

Ms. Giffords offered an amendment to require NSF to give priority in awarding grants for teacher summer institutes under the Mathematics and Science Education Partnership program to projects that involve teachers from high-need school systems. The amendment was adopted by a voice vote.

Mr. Akin offered an amendment to ensure that Section 204 not be considered as a mandate for use of specific STEM curricula. The amendment was adopted by a voice vote.

There being no further amendments, the amendment in the nature of a substitute was adopted by a voice vote.

With a quorum present, the bill was then unanimously approved by a voice vote.

Rep. Ralph Hall, Ranking Minority Member of the Committee, moved that the Committee favorably report the bill, H.R. 362, as amended, to the House with the recommendation that the bill do pass, and that the staff be instructed to make technical and conforming changes to the bill and prepare the legislative report and that the Chairman take all necessary steps to bring the bill before the House for consideration. With a quorum present, the motion was agreed to by a voice vote.

VI. Summary of Major Provisions of the Bill

This bill amends the National Science Foundation Authorization Act of 2002 by:

- amending the Robert Noyce Scholarship program to improve STEM teacher education and provide scholarships for college students in STEM fields who commit to teaching after graduation. Scholarship students major in a STEM field, learn content-specific pedagogy, get early field experience, and receive mentoring and induction support;
- amending the Mathematics and Science Education Partnership (MSP) program to provide for summer institutes and graduate programs that provide sustained, content-oriented professional development to teachers of math, science and technology;
- amending the STEP program by establishing centers for improvement of undergraduate education in STEM fields; and
- establishing a pilot program at NSF to build partnerships to improve laboratory science in secondary schools.

The bill also:

- establishes a national panel to collect model K–12 mathematics, science, and technology teaching materials; and
- authorizes appropriations for an existing program of summer institutes for teachers at the Department of Energy.

VII. Section-by-Section Analysis

Section 1. Table of contents

Section 2. Findings on the role of NSF in K–12 and undergraduate STEM education

Expresses the finding of Congress that NSF has made a valuable contribution to the improvement of K–12 education and that this role is explicitly required by NSF's founding authorization statute.

Section 3. Definitions used in the bill

TITLE I—SCIENCE SCHOLARSHIPS

Section 101. Short Title. 10,000 Teachers, 10 Million Minds Science and Math Scholarship Act.

Section 102. Findings relating the bill to the NAS report recommendations. Notes that the Gathering Storm report identifies recommendations the nation must take to address prosperity and that the report's highest priority recommendation is to improve K–12 STEM education.

Section 103. Policy objective. To increase by 10,000 annually the number of exemplary K–12 STEM teachers.

Section 104. Robert Noyce Teacher Scholarship Program. Amends the NSF Noyce Scholarship program, established by the NSF Authorization Act of 2002, to create incentives for colleges and universities to improve the training of STEM teachers and to increase the size and duration of the scholarships provided for science, math, and engineering majors who pursue teaching credentials:

- Provides competitive awards to institutions of higher education (or consortia of such institutions) that (1) establish cross-department faculty teams (science, math and engineering

faculty along with education faculty) to develop courses of instruction leading to baccalaureate degrees in fields of science, mathematics, and/or engineering and also preparing graduates to become certified or licensed to teach in a K–12 classroom; and (2) administer scholarships for students during their sophomore through senior years and summer internships following their freshman years.

• Requires early field teaching experiences for student teachers in the program under the supervision of highly experienced and effective teachers.

• Requires awardees to provide professional development and mentoring support to scholarship recipients after matriculation.

• Sets scholarship amounts at the cost of attendance at particular institutions, not to exceed $10,000 per year, and provides up to 3 years of scholarship support for any individual.

• Requires scholarship recipients to commit to teaching for up to 6 years following graduation (the period of teaching commitment is based on the number of years of scholarship support), reduces the commitment by one year for individuals who teach at high-need schools, and converts the scholarships to loans if the teaching commitment is not met.

• Requires NSF to track the proportion of individuals under the program who carry out their teaching obligation in high-need schools, fail to complete their teaching obligation, and remain in the teaching profession beyond their service commitment, including those who remain in high-need schools.

• Authorizes NSF to accept donations from the private sector to help support scholarships and internships.

• Authorizes $70 million for NSF for FY 2008, $101 million for FY 2009, $133 million for FY 2010, $164 million for FY 2011, and $196 million for FY 2012.

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

Section 201. Mathematics and Science Education Partnerships Amendments. Amends the Mathematics and Science Education Partnership program established by the NSF Authorization Act of 2002 in the following ways:

• Authorizes teacher training activities to prepare teachers to teach challenging STEM education courses, including Advanced Placement and International Baccalaureate courses, and provides for mentoring by professional scientists, mathematicians, and engineers.

• Authorizes the development of master's degree programs for in-service STEM teachers.

• Authorizes model induction programs for STEM teachers in their first 2 years of teaching.

Section 202. Teacher institutes. Provides for teacher institute programs at NSF and the Department of Energy (DOE).

NSF is directed to establish a grant program to support summer or academic year teacher institutes and authorizes summer teacher institutes as a component of the NSF 21st Century program. Some of these summer institutes must include teacher training activities to prepare teachers to teach challenging STEM education courses, including Advanced Placement and International Baccalaureate

courses. NSF is directed to give priority in awarding grants to applications that will attract STEM teachers from high-need schools.

Authorizes $32 million for NSF for FY 2008, $35.2 million for FY 2009, $38.7 million for FY 2010, $42.6 million for FY 2011, and $46.8 million for FY 2012.

The following amounts are authorized for the existing Laboratory Science Teacher Professional Development program at DOE: $3 million for FY 2008, $8 million for FY 2009, and $10 million for each year FY 2010 through FY 2012.

Section 203. Graduate degree program. Requires NSF, under the Mathematics and Science Education Partnership program, to develop and implement master's degree programs for in-service STEM teachers, who attend on a part-time basis and who will be able to complete the degree requirements within three years. The programs have the following features:

- Provide stipends to defray the cost of attendance for teachers in the program.
- Allow for support for the development of the courses of instruction and related educational materials and equipment (offering of online learning is an option).
- Require the distribution of awards among institutions of different sizes and geographic locations.

Authorizes $46 million for NSF for FY 2008, $50.6 million for FY 2009, $55.7 million for FY 2010, $61.2 million for FY 2011, and $67.3 million for FY 2012.

Section 204. Curricular Materials. Establishes a national panel of experts to identify and collect K–12 mathematics, science, and technology teaching materials that have been demonstrated to be effective and to recommend the development of new materials in areas where effective materials do not exist; and directs NSF and the Department of Education to develop ways to disseminate effective materials and support efforts to develop new materials, in accordance with the recommendations of the national panel. Emphasizes that the recommendations of the panel are not a mandate for specific K–12 curricula.

Section 205. Science, Technology, Engineering, and Mathematics Talent Expansion Program. Amends the STEM Talent Expansion (STEP) program established under the NSF Authorization Act of 2002 to create centers for improvement of undergraduate education in STEM fields, including centers to develop and enhance undergraduate curriculum and teaching methods and to train faculty and teaching assistants in effective pedagogical practices. Specifies that NSF is expected to provide STEP grants to a wide range of types of institutions, including minority-serving institutions, and that one goal of the STEP program is to attract individuals graduating from secondary schools with a concentration of students from low-income families.

Directs NSF to assess the effectiveness of the centers and to disseminate information about materials and methods developed.

Authorizes $44 million for NSF for the STEP program for FY 2008, of which $4 million is for centers; $55 million for FY 2009, of which $10 million is for centers; and $60 million for each year of FY 2010 through FY 2012, of which $10 million in each year is for centers.

Section 206. High-Need Local Educational Agency Definition. Amends the NSF Authorization Act of 2002 to redefine a high-need local educational agency as one that has a concentration of students from low-income families and a shortage of highly qualified teachers.

Section 207. Teacher Leaders. Amends the NSF Authorization Act of 2002 to replace the term "master teacher" each place it appears with the term "teacher leader".

Section 208. Laboratory Science Pilot Program. Amends the NSF Authorization Act of 2002 to establish a new research pilot program designated as "Partnerships for Access to Laboratory Science". The program will fund partnerships between universities, businesses, and high-need schools for the purpose of improving laboratory science in secondary schools. Grants funded under this program

- must have a one-to-one cost sharing from non-federal sources;
- must provide for teacher training and professional development in the effective use of laboratories; and
- may be used for acquisition or maintenance of instrumentation and equipment and the development of instructional programs.

Requires NSF to carry out an assessment of the effectiveness of the activities carried out under the pilot projects supported for improving student performance and to submit a report documenting its findings to Congress within five years of the date of enactment.

Authorizes $5 million for NSF for FY 2008, and "such sums" for FY 2009 through FY 2011.

Section 209. Study on Laboratory Equipment Donations for Schools. Requires NSF, in consultation with the Department of Education, to conduct a study and submit a report to Congress within two years of the date of enactment that documents the extent to which institutions of higher education donate used laboratory equipment to K–12 schools.

VIII. Committee Views

National Science Foundation Role in Science, Technology, Engineering, and Mathematics (STEM) Education

STEM education is a cornerstone of the historic mission of NSF. The NSF Act of 1950, which established NSF, directed the agency to support and strengthen STEM education programs at all levels. NSF has accumulated a 50–year record of accomplishment in developing highly successful STEM education programs, which are strongly supported by the education community. The Committee believes that it is vitally important that NSF continue to carry out its mission to improve K–12 and undergraduate STEM education. NSF's peer review system, its connections with higher education, and its prestige give it a unique role in improving STEM education that cannot be duplicated at any other federal agency.

Rising Above the Gathering Storm

The Act strengthens and expands existing programs at NSF to enhance federal STEM education efforts. The National Academies report, Rising Above the Gathering Storm, stresses the importance

of improving K–12 education in the United States and also emphasizes the need for increasing the number of undergraduate and graduate students studying and choosing careers in STEM fields. The Committee endorses the Academies' focus on the link between a technologically-educated population and the U.S. ability to innovate and remain competitive, and this Act implements key recommendations of the Gathering Storm report that relate to education.

K–12 STEM education

Robert Noyce Teacher Scholarship Program

The Committee recognizes that the preparation and retention of excellent K–12 teachers is essential to improving STEM education in the United States. The Act includes provisions for recruiting, training, and retaining teachers to ensure that schools have access to a pool of talented, qualified, and committed STEM teachers.

The Committee strongly believes that both strong STEM content knowledge and excellent pedagogical skills related to that content are necessary for success as a K–12 STEM teacher. This Act expands the Noyce program to support and encourage the transformation of how K–12 STEM teachers are educated in this country. In addition to providing scholarships to sophomores, juniors, and seniors, colleges and universities receiving Noyce grants will be required to offer a program that provides instruction (which may begin as early as freshman year) and early field teaching experiences, including interactions with teacher leaders and coursework developed by STEM and education faculty, to allow participants in the program both to graduate with STEM degrees and to meet requirements for teacher certification or licensing. The Committee also believes that the colleges and universities should develop and implement induction programs to support graduates of the program in their first few years of teaching in order to improve the retention of Noyce program graduates in the teaching profession.

The Committee believes that collaboration between STEM and education faculty is critical for the success of these programs. The Committee applauds the work of the University of Texas at Austin on its UTeach program and the University of California on its Cal Teach program, which are successful models of the type of teacher education and support program the Committee wishes to encourage.

The UTeach program prepares students to receive degrees in a STEM field and a certificate to teach in 4 years. This is a desirable model, but that model may not work in all settings. Students who enter programs late, or who major in certain engineering fields, or who are working for licensure in certain states may not be able to become fully certified teachers after just 4 years. The programs funded by the Noyce grants should streamline the certification process, although that may mean reducing a 6-year program to 5, or a 5-year program to 4-and-a-half.

The Committee believes that to maximize the impact of the teacher training programs supported through the Noyce Program, institutions receiving grants should make strong efforts to inform potential program participants about the program and the scholar-

ships. NSF should support such recruitment efforts and use annual conferences of participants as opportunities to share best practices in recruitment as well as in other program components, such as coursework, mentoring, and field teaching experiences.

The Gathering Storm report calls for federal programs to support recruiting 10,000 new mathematics and science teachers every year, and the appropriations authorized in this Act put the Noyce program on track to reach that level of effort in 2017.

The Committee expects NSF to do far more to publicize and promote participation by institutions of higher education in the Noyce Program, especially among schools that are more known for their rigorous STEM programs than they are for teacher preparation. Community or junior colleges can participate in Noyce as part of a consortium, although they cannot be sole recipients of Noyce grants.

The Committee expects that the preponderance of the funds for this program will go directly to participants in the form of scholarships and stipends. But the Committee also expects that sufficient funds will be allocated for capacity-building activities described in sections 10(a)(3)(A)(ii) and (iii) and (B)(ii) and (iii) of the NSF Act of 2002, as amended by this Act. The Committee also understands that the resources needed to initiate a teacher education program may exceed the level needed for steady state operation of the program. The Committee expects that NSF will ensure that resources are allocated under the program to ensure a sufficient investment in capacity-building activities, so that the program does not merely hand out scholarships and stipends but rather reforms the way teachers are educated.

Mathematics and Science Education Partnerships

The changes made by the Act to the existing Mathematics and Science Education Partnership program at NSF reflect a stronger focus on teacher training, especially in STEM content. The changes also address recommendations in this area by the Gathering Storm report, particularly on providing master's degree programs for in-service teachers and summer institutes and other training programs to prepare teachers to teach challenging mathematics, science, and technology courses. The Committee strongly believes that grant applications that focus on teacher training should be given strong priority by NSF and that particular attention should be given to improving the capabilities of STEM teachers serving in high-need school systems. Additionally, the Committee is concerned about the high attrition rates for new K–12 STEM teachers and recommends teacher induction programs, which provide content instruction, mentoring, professional development, and other support to teachers in the first few years of their career, to address this concern.

Also, because of the importance of improving the subject matter knowledge of teachers, the Act requires that the principal investigator for a partnership grant be a science, mathematics, or engineering faculty member at the grantee institution. To improve the focus of the partnership program, the Act requires that grants fall within the limits of $75,000 to $2,000,000 a year. By limiting grant size, the Committee hopes that proposed projects will focus on tar-

geted approaches to improving STEM education and thus allow clear evaluation of the effectiveness of each project.

In adding language allowing the development and dissemination of curriculum tools that will help foster inventiveness and innovation, the Committee recognizes the value of innovation in U.S. competitiveness and the economic benefits that the U.S. gains by being a culture that encourages and rewards innovation. To support and cultivate the next generation of inventive scientists and engineers, teachers should have access to curriculum tools that include activities such as open-ended problem solving; hands-on and "how things work" exercises; projects that emphasize creativity, design, and teamwork; and lessons to raise the stature of inventors and invention in the eyes of young people.

STEM education at the undergraduate level

Undergraduate education is the first step toward a career in teaching and in other science, engineering, or mathematics fields; it is the primary source of education and training for technical workers; and, it is often the last time non-majors will take a class in mathematics and science. The Committee believes that NSF, due to its close relationship with institutions of higher education and its expertise and experience in education at all levels, has a critical role to play in improving undergraduate STEM education for majors and non-majors, especially future teachers. No other Federal agency has a clear responsibility for undergraduate STEM education.

The Act expands NSF's STEP to fund the creation of centers at colleges and universities that will develop new approaches to undergraduate STEM education programs. The Committee intends that these centers focus not only on improving undergraduate teaching and courses at their own institutions, but also on developing and disseminating innovative curricula, laboratory experiences, and teaching and training methods that can be used throughout the country. The Committee expects STEP grants to support undergraduate education improvements in a wide variety of STEM fields and of types of institutions of higher education, including 2-year colleges and minority-serving institutions.

The Committee also emphasizes the important goal of the STEP grants in increasing participation by individuals currently underrepresented in STEM careers, including women, minorities, and graduates of high schools with a concentration of students from low-income families.

The Committee is also concerned that in running STEP, NSF has not seriously enforced the statutory requirement that an applicant set a numerical goal for increasing the number of STEM majors and that grantees be evaluated, in part, on the basis of whether they are meeting the numerical goals contained in their applications. The Committee expects STEP to be carried out pursuant to statute. This Act requires a report to Congress to ensure that NSF gathers data on majors at STEP institutions.

In addition to STEP, NSF currently carries out a range of other programs designed to improve undergraduate STEM education, and the Committee strongly supports the continuation of these activities, especially the Course, Curriculum, and Laboratory Improvement program.

Curricular materials

The committee feels that there should be better coordination among agencies and foundations dedicated to creating innovative curricular materials for K–12 STEM instruction. This Act requires the Director of NSF to convene a national panel to identify, collect, and disseminate the best available materials. The Committee does not intend that the recommendations of the panel constitute a mandate of specific K–12 curricula.

Technology

Engineering and technology education includes instruction in engineering design processes, human innovation, and design skills. The Committee expects the participation of technology instructors in the teacher recruitment, preparation, and professional development programs authorized in this bill. No reference to elementary or secondary mathematics and science education should be understood to exclude technology or pre-engineering education.

Partnerships for Access to Laboratory Science

The Committee believes that hands-on laboratory instruction should be an integral part of science and technology education in secondary schools and has established an NSF research program, Partnerships for Access to Laboratory Science, to determine best practices for integrating classroom instruction and laboratory exercises. The Committee expects the results of projects supported under this program to be carefully assessed and the findings widely disseminated.

In awarding demonstration grants for Partnerships for Access to Laboratory Science, it is the Committee's intention that the non-federal partners of the partnership provide funding for activities described in section 8(8)(B)(i) and (ii) of the NSF Authorization Act of 2002, as amended by this Act, and that federal funds be primarily used to support professional development and incorporation of relevant research practices.

IX. Cost Estimate

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science and Technology prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 362 does not contain new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 362 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. Congressional Budget Office Cost Estimate

H.R. 362—A bill to authorize science scholarships for educating mathematics and science teachers, and for other purposes

Summary: H.R. 362 would authorize the appropriation of about $1.5 billion for several new and existing programs within the National Science Foundation (NSF) and the Department of Energy (DOE) that support the training and professional development of elementary and secondary schools teachers in the fields of science, technology, engineering, and mathematics (STEM). CBO estimates that implementing H.R. 362 would cost $898 million over the 2008–2012 period, assuming appropriation of the amounts authorized or estimated to be necessary. Enacting H.R. 362 would have no significant effect on direct spending or revenues.

H.R. 362 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA); the bill would benefit public institutions of higher education.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 362 is shown in the following table. The cost of this legislation falls within budget function 250 (general science, space, and technology).

	By fiscal year, in millions of dollars—					
	2007	2008	2009	2010	2011	2012
SPENDING SUBJECT TO APPROPRIATION						
Spending Under Current Law for Certain Programs Authorized by H.R. 362						
Scholarship, Teacher Development, and Talent Expansion Programs						
Estimated Budget Authority [1]	40	0	0	0	0	0
Estimated Outlays	35	33	18	8	2	0
Proposed Changes						
Robert Noyce Teacher Scholarship Program						
Authorization Level	0	70	101	133	164	196
Estimated Outlays	0	8	40	75	109	141
Teacher Institutes and Development Programs						
Authorization Level	0	35	43	49	53	57
Estimated Outlays	0	4	19	32	42	48
STEM Talent Expansion Program						
Authorization Level	0	44	55	60	60	60
Estimated Outlays	0	5	24	41	52	57
Graduate Degree Grant Program						
Authorization Level	0	46	51	56	61	67
Estimated Outlays	0	6	24	39	49	56
Laboratory Science Expansion Program						
Estimated Authorization Level	0	5	5	5	5	0
Estimated Outlays	0	1	3	4	5	4
Other Provisions						
Estimated Authorization Level	0	2	2	2	2	2
Estimated Outlays	0	2	2	2	2	2
Total Changes						
Estimated Authorization Level	0	202	257	305	345	382
Estimated Outlays	0	26	112	193	259	308
Spending Under H.R. 362						
Estimated Authorization Level	40	202	257	305	345	382
Estimated Outlays	35	59	130	201	261	308

[1] The 2007 level reflects estimated appropriations for the Robert Noyce Scholarship Program; teacher institutes and development programs at NSF and DOE; and the STEM Talent Expansion Program.

Basis of estimate: H.R. 362 would authorize about $1.5 billion for new and existing programs to provide support for undergraduate students and elementary and secondary school teachers in STEM

fields. CBO estimates that implementing H.R. 362 would cost $898 million over the 2008–2012 period, assuming appropriation of the necessary amounts. For this estimate, CBO assumes that the legislation will be enacted before the beginning of fiscal year 2008 and that the necessary amounts will be appropriated each year. Estimated outlays are based on historical spending patterns for existing or similar programs.

Authorizations for existing programs

H.R. 362 would authorize appropriations for several existing programs at NSF and DOE, including the Robert Noyce Scholarship Program, the Teacher Institutes for the 21st Century program, the Laboratory Science Teacher Professional Development program, and the Science, Technology, Engineering, and Mathematics Talent Expansion program. The bill would authorize $149 million for 2008 for those programs and a total of about $1.2 billion over the 2008–2012 period. (By comparison, about $40 million was appropriated for 2007.) CBO estimates that implementing these provisions would cost $697 million over the 2008–2012 period, assuming appropriation of the specified amounts.

Robert Noyce Teacher Scholarship Program. This program provides grants to institutions of higher education for scholarships and stipends for undergraduate students in the fields of mathematics, science and engineering planning to become elementary and secondary school teachers. According to NSF, about $10 million was provided for the Robert Noyce Teacher Scholarship program for 2007.

Section 104 would authorize the appropriation of $70 million in 2008 and a total of $664 million over the 2008–2012 period for this scholarship program. The bill would increase the minimum annual scholarship under the program from $7,500 to $10,000 and would extend the maximum award from two years to three years. Assuming appropriation of the specified amounts, CBO estimates that this program would cost $373 million over the 2008–2012 period.

Teacher Institutes and Development. H.R. 362 would authorize appropriations for two programs that foster partnerships between researchers and those who teach math and science in elementary and secondary schools. Section 202 would authorize the appropriation of $32 million for 2008 and $195 million over the 2008–2012 period for NSF's Funding for Teacher Institutes for the 21st Century program, which received about $2 million in 2007. Assuming appropriation of the specified amounts, this program would cost $121 million over the 2008–2012 period, CBO estimates.

Similarly, DOE's Office of Science will spend about $2 million in 2007 for the Laboratory Science Teacher Professional Development program, which provides professional development for about 300 elementary and secondary school teachers through partnerships with several DOE national laboratories. Section 202 would authorize the appropriation of $3 million for 2008 and a total of $41 million over the 2008–2012 period for this program. CBO estimates that outlays for this program would total $24 million over the 2008–2012 period, assuming appropriation of the specified amounts.

STEM Talent Expansion Program. NSF's STEM Talent Expansion Program (STEP) currently spends about $26 million a year for grants to institutions of higher education to increase the number

of undergraduate students that complete programs in STEM fields. Grant funding may be used to promote research, interdisciplinary teaching, and other activities such as internships, student advising, and community college bridge programs.

Section 205 would authorize the appropriation of $40 million for the STEP program for 2008 and a total of $255 million over the 2008–2012 period. In addition, the bill would direct NSF to establish centers to support the STEP program, with funding authorized at $4 million in 2008 and $24 million over the 2008–2012 period. The centers would be responsible for developing undergraduate curriculum, teaching methods, and better training for professors and teaching assistants to increase the number of STEM graduates. CBO estimates that implementing those two initiatives would cost $179 million over the 2008–2012 period if the authorized funds are appropriated.

Authorization of new initiatives

H.R. 362 would authorize several new initiatives at NSF, including a graduate degree grant program, a Laboratory Science Pilot Program, and various other activities. CBO estimates that implementing those programs would cost $201 million over the 2008–2012 period, assuming appropriation of the necessary funds.

Graduate Degree Grant Program. Section 204 would authorize the appropriation of $281 million over the 2008–2012 period for grants to institutions of higher education to establish master's degree programs for math and science teachers currently in the workforce. That funding, which would be administered by NSF's Math and Science Partnership program, would be used to develop instructional materials, provide stipend support, and acquire equipment necessary to offer online instruction. CBO estimates that implementing this program would cost $174 million over the 2008–2012 period.

Laboratory Science Pilot Program. Section 208 would establish a new program at NSF that would provide grants to educational partnerships for purchasing laboratory equipment, maintaining and renovating facilities, providing safety training, and developing programs that integrate laboratory experience with classroom instruction. The federal cost-share for these grants would be capped at 50 percent. The bill would authorize the appropriation of $5 million for this program for 2008, and such sums as may be necessary through fiscal year 2011. CBO estimates that implementing this provision would cost $17 million over the 2008–2012 period.

Other provisions. In addition, H.R. 362 would:

Establish a program for teachers participating in the Math and Science Partnership to develop mentor relationships with industry scientists, mathematicians and engineers;

Establish a national panel on curricular materials; and

Direct NSF to report to the Congress on the effectiveness of several programs authorized by the bill.

Based on the cost of similar activities, CBO estimates that NSF would spend about $10 million over the 2008–2012 period to implement those projects, assuming appropriation of the necessary amounts.

Intergovernmental and private-sector impact: H.R. 362 contains no intergovernmental or private-sector mandates as defined in the

UMRA. The bill would authorize activities and grant funds that would benefit institutions of higher education. Any costs they might incur would result from complying with conditions of Federal assistance.

Estimate prepared by: Federal Costs: Daniel Hoople; Impact on State, Local, and Tribal Governments: Lisa Ramirez-Branum; Impact on the Private Sector: Craig Cammarata.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

XI. Compliance With Public Law 104–4

H.R. 362 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The oversight findings and recommendations of the Committee on Science and Technology are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

Pursuant to clause (3)(c) of House rule XIII, the goals of H.R. 362 are to strengthen and expand programs at NSF

to improve K–12 mathematics and science education through recruitment, training, mentoring, and professional development of teachers and

to increase the number of undergraduates entering STEM fields.

XIV. Constitutional Authority Statement

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 362.

XV. Federal Advisory Committee Statement

H.R. 362 does not establish nor authorize the establishment of any advisory committee.

XVI. Congressional Accountability Act

The Committee finds that H.R. 362 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVII. Earmark Identification

H.R. 362 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9(d), 9(e), or 9(f) of Rule XXI.

XVIII. Statement on Preemption of State, Local, or Tribal Law

This bill is not intended to preempt any state, local, or tribal law.

XIX. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 2002

SEC. 4. DEFINITIONS.

In this Act:

(1) * * *

* * * * * * *

[(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.]

(8) HIGH-NEED LOCAL EDUCATIONAL AGENCY.—The term "high-need local educational agency" means a local educational agency that—

(A) is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq) as a result of having within its jurisdiction concentrations of children from low income families; and

(B) is experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or engineering.

* * * * * * *

(11) [MASTER TEACHER] *TEACHER LEADER*.—The term "[master teacher] *teacher leader*" means a mathematics or science teacher who works to improve the instruction of mathematics or science in kindergarten through grade 12 through—

(A) * * *

* * * * * * *

(E) providing professional development, including for the purposes of training other [master teachers] *teacher leaders*, to mathematics and science teachers.

* * * * * * *

SEC. 8. SPECIFIC PROGRAM AUTHORIZATIONS.

From amounts authorized to be appropriated under section 5, the Director shall carry out the Foundation's research and education programs, including the following initiatives in accordance with this section:

(1) * * *

* * * * * * *

(6) ROBERT NOYCE *TEACHER* SCHOLARSHIP PROGRAM.—The Robert Noyce *Teacher* Scholarship Program described in section 10.

(7) SCIENCE, MATHEMATICS, ENGINEERING, AND TECHNOLOGY TALENT EXPANSION PROGRAM.—(A) A program of [competitive, merit-based, multi-year grants for eligible applicants to increase the number of students studying toward and completing associate's or bachelor's degrees in science, mathematics, engineering, and technology, particularly in fields that have faced declining enrollment in recent years.] *competitive, merit-reviewed multiyear grants for eligible applicants to improve undergraduate education in science, mathematics, engineering, and technology through—*

(i) the creation of programs to increase the number of students studying toward and completing associate's or bachelor's degrees in science, technology, engineering, and mathematics, particularly in fields that have faced declining enrollment in recent years; and

(ii) the creation of centers (in this paragraph referred to as "Centers") to develop undergraduate curriculum, teaching methods for undergraduate courses, and methods to better train professors and teaching assistants who teach undergraduate courses to increase the number of students completing undergraduate courses in science, technology, engineering, and mathematics, including the number of nonmajors, and to improve student academic achievement in those courses.

Grants made under clause (ii) shall be awarded jointly through the Education and Human Resources Directorate and at least 1 research directorate of the Foundation.

[(B) In selecting projects under this paragraph, the Director shall strive to increase the number of students studying toward and completing baccalaureate degrees, concentrations, or certificates in science, mathematics, engineering, or technology who are individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).]

(B) In selecting projects under subparagraph (A)(i), the Director shall strive to increase the number of students studying toward and completing baccalaureate degrees, concentrations, or

certificates in science, mathematics, engineering, or technology who are—

(i) individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b); or

(ii) graduates of a secondary school that is administered by a local educational agency that is receiving grants under title I of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq) as a result of having within its jurisdiction concentrations of children from low income families.

(C)*(i)* The types of projects the Foundation may support ⟦under this paragraph⟧ *under subparagraph (A)(i)* include those that promote high quality—

⟦(i)⟧ *(I)* interdisciplinary teaching;

⟦(ii)⟧ *(II)* undergraduate-conducted research;

⟦(iii)⟧ *(III)* mentor relationships for students;

⟦(iv)⟧ *(IV)* bridge programs that enable students at community colleges to matriculate directly into baccalaureate science, mathematics, engineering, or technology programs;

⟦(v)⟧ *(V)* internships carried out in partnership with industry; and

⟦(vi)⟧ *(VI)* innovative uses of digital technologies, particularly at institutions of higher education that serve high numbers or percentages of economically disadvantaged students.

(ii) The types of activities the Foundation may support under subparagraph (A)(ii) include—

(I) creating model curricula and laboratory programs;

(II) developing and demonstrating research-based instructional methods and technologies;

(III) developing methods to train graduate students and faculty to be more effective teachers of undergraduates;

(IV) conducting programs to disseminate curricula, instructional methods, or training methods to faculty at the grantee institutions and at other institutions;

(V) conducting assessments of the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii); and

(VI) conducting any other activities the Director determines will accomplish the goals described in subparagraph (A)(ii).

(D)(i) In order to receive a grant ⟦under this paragraph⟧ *under subparagraph (A)(i)*, an eligible applicant shall establish targets to increase the number of students studying toward and completing associate's or bachelor's degrees in science, mathematics, engineering, or technology.

(ii) A grant ⟦under this paragraph⟧ *under subparagraph (A)(i)* shall be awarded for a period of 5 years, with the final 2 years of funding contingent on the Director's determination that satisfactory progress has been made by the grantee toward meeting the targets established under clause (i).

(iii) In the case of community colleges, a student who transfers to a baccalaureate program, or receives a certificate under

an established certificate program, in science, mathematics, engineering, or technology shall be counted toward meeting a target established under clause (i).

(iv) A grant under subparagraph (A)(ii) shall be awarded for 5 years, and the Director may extend such a grant for up to 2 additional 3 year periods.

(E) For each grant awarded [under this paragraph] *under subparagraph (A)(i)* to an institution of higher education, at least 1 principal investigator shall be in a position of administrative leadership at the institution of higher education, and at least 1 principal investigator shall be a faculty member from an academic department included in the work of the project. For each grant awarded to a consortium or partnership, at each institution of higher education participating in the consortium or partnership, at least 1 of the individuals responsible for carrying out activities authorized [under this paragraph] *under subparagraph (A)(i)* at that institution shall be in a position of administrative leadership at the institution, and at least 1 shall be a faculty member from an academic department included in the work of the project at that institution.

(F) Grants awarded under subparagraph (A)(ii) shall be carried out by a department or departments of science, mathematics, or engineering at institutions of higher education (or a consortia thereof), which may partner with education faculty. Applications for awards under subparagraph (A)(ii) shall be submitted to the Director at such time, in such manner, and containing such information as the Director may require. At a minimum, the application shall include—

(i) a description of the activities to be carried out by the Center;

(ii) a plan for disseminating programs related to the activities carried out by the Center to faculty at the grantee institution and at other institutions;

(iii) an estimate of the number of faculty, graduate students (if any), and undergraduate students who will be affected by the activities carried out by the Center; and

(iv) a plan for assessing the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii).

(G) In evaluating the applications submitted under subparagraph (F), the Director shall consider, at a minimum—

(i) the ability of the applicant to effectively carry out the proposed activities, including the dissemination activities described in subparagraph (C)(ii)(IV); and

(ii) the extent to which the faculty, staff, and administrators of the applicant institution are committed to improving undergraduate science, mathematics, and engineering education.

(H) In awarding grants under subparagraph (A)(ii), the Director shall endeavor to ensure that a wide variety of science, technology, engineering, and mathematics fields and types of institutions of higher education, including 2-year colleges and minority-serving institutions, are covered, and that—

(i) at least 1 Center is housed at a Doctoral/Research University as defined by the Carnegie Foundation for the Advancement of Teaching; and

(ii) at least 1 Center is focused on improving undergraduate education in an interdisciplinary area.

(I) The Director shall convene an annual meeting of the awardees under this paragraph to foster collaboration and to disseminate the results of the Centers and the other activities funded under this paragraph.

[(F)] *(J)* In this paragraph, the term "eligible applicant" means—

(i) * * *

* * * * * * *

(8) SECONDARY SCHOOL SYSTEMIC INITIATIVE.—*(A)* A program of competitive, merit-based grants for State educational agencies or local educational agencies that supports the planning and implementation of agency-wide secondary school reform initiatives designed to promote scientific and technological literacy, meet the mathematics and science education needs of students at risk of not achieving State student academic achievement standards, reduce the need for basic skill training by employers, and heighten college completion rates through activities, such as—

[(A)] *(i)* systemic alignment of secondary school curricula and higher education freshman placement requirements;

[(B)] *(ii)* development of materials and curricula that support small, theme-oriented schools and learning communities;

[(C)] *(iii)* implementation of enriched mathematics and science curricula for all secondary school students;

[(D)] *(iv)* strengthened teacher training in mathematics, science, and reading as it relates to technical and specialized texts;

[(E)] *(v)* laboratory improvement and provision of instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction; or

[(F)] *(vi)* other secondary school systemic initiatives that enable grantees to leverage private sector funding for mathematics, science, engineering, and technology scholarships.

(B) In accordance with subparagraph (A)(v), the Director shall establish a research pilot program designated as "Partnerships for Access to Laboratory Science" to award grants to partnerships to improve laboratories and provide instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level. Grants under this subparagraph may be used for—

(i) purchase, rental, or leasing of equipment, instrumentation, and other scientific educational materials;

(ii) maintenance, renovation, and improvement of laboratory facilities;

(iii) development of instructional programs designed to integrate the laboratory experience with classroom instruction and to be consistent with State mathematics and science academic achievement standards;

(iv) training in laboratory safety for school personnel;

(v) design and implementation of hands-on laboratory experiences to encourage the interest of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in mathematics, science, engineering, and technology and help prepare such individuals to pursue postsecondary studies in these fields; and

(vi) assessment of the activities funded under this subparagraph.

(C) Grants may be made under subparagraph (B) only to a partnership—

(i) for a project that includes significant teacher training and professional development components; or

(ii) that establishes that appropriate teacher training and professional development is being addressed, or has been addressed, through other means.

(D) Grants awarded under subparagraph (B) shall be to a partnership that—

(i) includes an institution of higher education or a community college;

(ii) includes a high-need local educational agency;

(iii) includes a business or eligible nonprofit organization; and

(iv) may include a State educational agency, other public agency, National Laboratory, or community-based organization.

(E) The Federal share of the cost of activities carried out using amounts from a grant under subparagraph (B) shall not exceed 50 percent.

(F) The Director shall require grant recipients to submit a report to the Director on the results of the project supported by the grant.

* * * * * * *

SEC. 9. 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*, through 1 or more of its departments in science, mathematics, or engineering,* 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 **[**a State educational agency**]** *education faculty from the participating institution or institutions 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) * * *

(B) offering *content-specific* professional development programs, including summer or academic year institutes or workshops, *which are* designed to strengthen the capabilities of mathematics and science teachers *and which may include teacher training activities to prepare mathematics and science teachers to teach challenging mathematics, science, and technology college-preparatory courses, including Advanced Placement and International Baccalaureate 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;

* * * * * * *

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

* * * * * * *

(I) developing initiatives to increase and sustain the number, quality, and diversity of prekindergarten through grade 12 teachers of mathematics and science, *including model induction programs for teachers in their first 2 years of teaching,* especially in underserved areas;

* * * * * * *

(K) [developing and offering mathematics or science enrichment programs for students, including after-school and summer programs;] *developing educational programs and materials and conducting mathematics, science, and technology enrichment programs for students, including after-school programs and summer camps for students described in subsection (b)(2)(G);*

* * * * * * *

(4) [MASTER TEACHERS] *TEACHER LEADERS*.—Activities carried out in accordance with paragraph (3)(E) shall—

(A) emphasize the training of [master teachers] *teacher leaders* who will improve the instruction of mathematics or science in kindergarten through grade 12;

* * * * * * *

(C) provide training only to teachers who will be granted sufficient nonclassroom time to serve as [master teachers]

teacher leaders, as demonstrated by assurances their employing school has provided to the Director, in such time and such manner as the Director may require.

* * * * * * *

(8) MASTER'S DEGREE PROGRAMS.—Activities carried out in accordance with paragraph (3)(B) shall include the development and offering of master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills, as described in section 203 of the Act enacting this paragraph. Grants provided under this section may be used to develop and implement courses of instruction for the master's degree programs, which may involve online learning, and develop related educational materials.

(9) 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, including Advanced Placement and International Baccalaureate courses, in accordance with paragraph (3)(B) shall encourage companies employing scientists, mathematicians, or engineers to provide mentors to teachers and students and provide for the coordination of such mentoring activities.

(10) INVENTIVENESS.—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.

(b) SELECTION PROCESS.—

(1) * * *

(2) REVIEW OF APPLICATIONS.—In evaluating the applications submitted under paragraph (1), the Director shall consider, at a minimum—

(A) * * *

* * * * * * *

(E) the extent to which the evaluation described in paragraph (1)(E) will be independent and based on objective measures;

[(E)**]** *(F)* the likelihood that the partnership will demonstrate activities that can be widely implemented as part of larger scale reform efforts; and

[(F)**]** *(G)* the extent to which the activities will encourage the interest of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in mathematics, science, engineering, and technology and will help prepare such individuals to pursue postsecondary studies in these fields.

* * * * * * *

(4) MINIMUM AND MAXIMUM GRANT SIZE.—A grant awarded under this section shall be not less than $75,000 or greater than $2,000,000 for any fiscal year.

(c) ACCOUNTABILITY AND DISSEMINATION.—

(1) * * *

[(2) DISSEMINATION OF RESULTS.—(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) that are demonstrated to be effective shall be made widely available to the public.**]**

(2) REPORT ON MODEL PROJECTS.—The Director shall determine which completed projects funded through the program under this section should be seen as models to be replicated on a more expansive basis at the State or national levels. Not later than 1 year after the date of enactment of this paragraph, the Director shall transmit a report describing the results of this study 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.

(3) REPORT ON EVALUATIONS.—Not later than 4 years after the date of enactment of this paragraph, 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)**]** *(4)* 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)**]** *(5)* 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 Act of 1965 (20 U.S.C. 6601 et seq.). The report under this paragraph shall be submitted along with the President's annual budget request.

[(5)**]** *(6)* 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) * * *

* * * * * * *

(d) DEFINITIONS.—In this section—

(1) the term "mathematics and science teacher" means a mathematics, science, or technology 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.

SEC. 10. ROBERT NOYCE *TEACHER* SCHOLARSHIP PROGRAM.

(a) SCHOLARSHIP PROGRAM.—

(1) IN GENERAL.—The Director shall carry out a program to award grants to institutions of higher education (or consortia of such institutions) [to provide scholarships, stipends, and programming designed] to recruit and train mathematics and science teachers *and to provide scholarships and stipends to students participating in the program*. Such program shall be known as the "Robert Noyce *Teacher* Scholarship Program".

* * * * * * *

(3) USE OF GRANTS.—Grants provided under this section shall be used by institutions of higher education or consortia—

(A) to develop and implement a program to [encourage top college juniors and seniors] *recruit and prepare undergraduate students* majoring in mathematics, science, and engineering at the grantee's institution to become *qualified as* mathematics and science teachers, through—

(i) * * *

(ii) offering [programs to help scholarship recipients] *academic courses and early field teaching experiences designed to prepare students participating in the program* to teach in elementary schools and secondary schools, including [programs that will result in] *such preparation as is necessary to meet requirements for* teacher certification or licensing; [and]

(iii) offering programs to [scholarship recipients] *students participating in the program*, both before and after they receive their baccalaureate degree, to [enable the recipients] *enable the students* to become better mathematics and science teachers, to fulfill the service requirements of this section, and to exchange ideas with others in their fields; [or] *and*

(iv) providing summer internships for freshman students participating in the program; or

(B) to develop and implement a program to [encourage] *recruit and prepare* science, mathematics, or engineering professionals to become *qualified as* mathematics and science teachers, through—

(i) * * *

[(ii) offering programs to help stipend recipients obtain teacher certification or licensing; and]

(ii) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing; and

* * * * * * *

(4) ELIGIBILITY REQUIREMENT.—To be eligible for an award under this section, an institution of higher education (or con-

sortia of such institutions) shall ensure that specific faculty members and staff from the institution's mathematics, science, or engineering departments and specific education faculty are designated to carry out the development and implementation of the program. An institution of higher education may also include teacher leaders to participate in developing the pedagogical content of the program and to supervise students participating in the program in their field teaching experiences. No institution of higher education shall be eligible for an award unless faculty from the institution's mathematics, science, or engineering departments are active participants in the program.

(b) SELECTION PROCESS.—

(1) APPLICATION.—An institution of higher education or consortium seeking funding under 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 [scholarship or stipend] program that the applicant intends to operate, including the number of scholarships *and summer internships* or the size and number of stipends the applicant intends to award, *the type of activities proposed for the recruitment of students to the program,* and the selection process that will be used in awarding the scholarships or stipends;

(B) evidence that the applicant has the capability to administer the [scholarship or stipend] program in accordance with the provisions of this section[; and]*, which may include a description of any existing programs at the applicant's institution that are targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;*

[(C) a description of the programming that will be offered to scholarship or stipend recipients during and after their matriculation in the program for which the scholarship or stipend is received.]

(C) a description of the academic courses and field teaching experiences required under subsection (a)(3)(A)(ii) and (B)(ii), including—

(i) a description of the undergraduate program that will enable a student to graduate within 5 years with a major in mathematics, science, or engineering and to obtain teacher certification or licensing;

(ii) a description of the field teaching experiences proposed; and

(iii) evidence of agreements between the applicant and the schools or school districts that are identified as the locations at which field teaching experiences will occur;

(D) a description of the programs required under subsection (a)(3)(A)(iii) and (B)(iii), including activities to assist new teachers in fulfilling their service requirements under this section; and

(E) an identification of the applicant's mathematics, science, or engineering faculty and its education faculty

who will carry out the development and implementation of the program as required under subsection (a)(4).

(2) REVIEW OF APPLICATIONS.—In evaluating the applications submitted under paragraph (1), the Director shall consider, at a minimum—

(A) the ability of the applicant to effectively carry out the program;

(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics, science, and technology effectively in elementary and secondary schools;

[(B)] *(C)* the extent to which the applicant is committed to making the program a central organizational focus;

[(C)] *(D)* the degree to which the proposed programming will enable scholarship or stipend recipients to become successful mathematics and science teachers;

[(D)] *(E)* the number and quality of the students that will be served by the program; and

[(E) the ability of the applicant to recruit students who would otherwise not pursue a career in teaching.]

(F) the ability of the applicant to recruit students who are individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).

(c) SCHOLARSHIP REQUIREMENTS.—

(1) IN GENERAL.—Scholarships under this section shall be available only to students who are—

(A) * * *

(B) in the last [2 years] *3 years* of a baccalaureate degree program.

* * * * * * *

(3) AMOUNT.—The Director shall establish for each year the amount to be awarded for scholarships under this section for that year, which shall be not less than [$7,500] *$10,000* per year, except that no individual shall receive for any year more than the cost of attendance at that individual's institution. Individuals may receive a maximum of [2 years of scholarship support] *3 years of scholarship support, unless the Director establishes a policy by which part-time students may receive additional years of support*.

(4) SERVICE OBLIGATION.—If an individual receives a scholarship, that individual shall be required to complete, within [6 years] *8 years* after graduation from the baccalaureate degree program for which the scholarship was awarded, 2 years of service as a mathematics or science teacher for each year a scholarship was received*, with a maximum service requirement of 6 years*. [Service required under this paragraph shall be performed in a high-need local educational agency.]

(5) EXCEPTION.—The period of service obligation under paragraph (4) is reduced by 1 year for scholarship recipients whose service is performed in a high-need local educational agency.

(d) STIPENDS.—

(1) IN GENERAL.—Stipends under this section shall be available only to mathematics, science, and engineering professionals who, while receiving the stipend, are enrolled in a program [to receive certification or licensing to teach] *established under subsection (a)(3)(B)*.

(2) SELECTION.—Individuals shall be selected to receive stipends under this section primarily on the basis of academic merit *and professional achievement*, with consideration given to financial need and to the goal of promoting the participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b).

(3) DURATION.—Individuals may receive a maximum of [1 year] *16 months* of stipend support.

(4) SERVICE OBLIGATION.—If an individual receives a stipend under this section, that individual shall be required to complete, within [6 years] *4 years* after graduation from the program for which the stipend was awarded, 2 years of service as a mathematics or science teacher [for each year a stipend was received]. Service required under this paragraph shall be performed in a high-need local educational agency.

* * * * * * *

(g) FAILURE TO COMPLETE SERVICE OBLIGATION.—

(1) * * *

(2) AMOUNT OF REPAYMENT.—(A) If a circumstance described in paragraph (1) occurs before the completion of one year of a service obligation under this section, the United States shall be entitled to recover from the individual, within one year after the date of the occurrence of such circumstance, an amount equal to—

(i) * * *

(ii) the interest on the amounts of such awards which would be payable if at the time the awards were received they were loans bearing interest at the maximum legal prevailing rate, as determined by the [Treasurer of the United States,] *Treasurer of the United States.*

[multiplied by 2.]

* * * * * * *

(i) DEFINITIONS.—In this section—

(1) * * *

* * * * * * *

(3) the term "mathematics, science, or engineering professional" means a person who holds a baccalaureate, masters, or doctoral degree in science, mathematics, or engineering and is working in *or had a career in* that field or a related area;

(4) the term "scholarship" means an award under subsection (c); [and]

(5) the term "stipend" means an award under subsection (d)[.]*; and*

(6) the term "teacher leader" 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, for the purposes of training other teacher leaders, to mathematics and science teachers.

(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950, the Director is authorized to accept donations from the private sector to support scholarships, stipends, or internships associated with programs under this section.

(k) ASSESSMENT OF TEACHER SERVICE AND RETENTION.—Not later than 4 years after the date of enactment of this subsection, the Director shall transmit to Congress a report on the effectiveness of the program carried out under this section. The report shall include the proportion of individuals receiving scholarships or stipends under the program who —

(1) fulfill their service obligation required under this section in a high-need local educational agency;

(2) elect to fulfill their service obligation in a high-need local educational agency but fail to complete it, as defined in subsection (g);

(3) remain in the teaching profession beyond their service obligation; and

(4) remain in the teaching profession in a high-need local educational agency beyond their service obligation.

(l) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Director for the Robert Noyce Teacher Scholarship Program—

(1) $70,000,000 for fiscal year 2008;

(2) $101,000,000 for fiscal year 2009;

(3) $133,000,000 for fiscal year 2010;

(4) $164,000,000 for fiscal year 2011; and

(5) $196,000,000 for fiscal year 2012.

* * * * * * *

XX. COMMITTEE RECOMMENDATIONS

On March 28, 2007, the Committee on Science and Technology favorably reported H.R. 362, as amended, by a voice vote and recommended its enactment.

XXI. CORRESPONDENCE

MAJORITY MEMBERS:

GEORGE MILLER, CALIFORNIA, Chairman

DALE E. KILDEE, MICHIGAN, Vice Chairman
DONALD M. PAYNE, NEW JERSEY
ROBERT E. ANDREWS, NEW JERSEY
ROBERT C. "BOBBY" SCOTT, VIRGINIA
LYNN C. WOOLSEY, CALIFORNIA
RUBÉN HINOJOSA, TEXAS
CAROLYN McCARTHY, NEW YORK
JOHN F. TIERNEY, MASSACHUSETTS
DENNIS J. KUCINICH, OHIO
DAVID WU, OREGON
RUSH D. HOLT, NEW JERSEY
SUSAN A. DAVIS, CALIFORNIA
DANNY K. DAVIS, ILLINOIS
RAÚL M. GRIJALVA, ARIZONA
TIMOTHY H. BISHOP, NEW YORK
LINDA T. SANCHEZ, CALIFORNIA
JOHN P. SARBANES, MARYLAND
JOE SESTAK, PENNSYLVANIA
DAVID LOEBSACK, IOWA
MAZIE HIRONO, HAWAII
JASON ALTMIRE, PENNSYLVANIA
JOHN A. YARMUTH, KENTUCKY
PHIL HARE, ILLINOIS
YVETTE D. CLARKE, NEW YORK
JOE COURTNEY, CONNECTICUT
CAROL SHEA-PORTER, NEW HAMPSHIRE

COMMITTEE ON EDUCATION AND LABOR
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MINORITY MEMBERS:

HOWARD "BUCK" McKEON, CALIFORNIA,
Senior Republican Member

THOMAS E. PETRI, WISCONSIN
PETER HOEKSTRA, MICHIGAN
MICHAEL N. CASTLE, DELAWARE
MARK E. SOUDER, INDIANA
VERNON J. EHLERS, MICHIGAN
JUDY BIGGERT, ILLINOIS
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JOE WILSON, SOUTH CAROLINA
JOHN KLINE, MINNESOTA
CATHY McMORRIS RODGERS, WASHINGTON
KENNY MARCHANT, TEXAS
TOM PRICE, GEORGIA
LUIS G. FORTUÑO, PUERTO RICO
CHARLES W. BOUSTANY, JR., LOUISIANA
VIRGINIA FOXX, NORTH CAROLINA
JOHN R. "RANDY" KUHL, JR., NEW YORK
ROB BISHOP, UTAH
DAVID DAVIS, TENNESSEE
TIMOTHY WALBERG, MICHIGAN
DEAN HELLER, NEVADA

April 3, 2007

The Honorable Bart Gordon
Chairman, Committee on Science and Technology
2320 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Gordon:

I am writing to confirm our mutual understanding regarding consideration of H.R. 362, the "*10,000 Teachers, 10 Million Minds Science and Math Scholarship Act*," which was referred to the Committee on Science. As you know, the Committee on Education and Labor has a jurisdictional interest in H.R. 362, particularly as we move forward to reauthorize the Higher Education Act this term.

Given the importance of moving this bill forward promptly, I do not intend to request the sequential referral of H.R. 362 to the Committee on Education and Labor. However, I do so only with the understanding that this procedural route should not be construed to prejudice this Committee's jurisdictional interests and prerogatives on this bill or any other similar legislation and will not be considered as precedent for consideration of matters of jurisdictional interest to the Committee on Education and Labor in the future. In addition, should this bill or similar legislation be considered in a conference with the Senate, I would expect members of the Committee on Education and Labor to be appointed to the conference committee on such measures.

Finally, I ask that you include a copy of our exchange of letters in your committee's report on H.R. 362 and in the *Congressional Record* during the consideration of this bill. If you have any questions regarding this matter, please do not hesitate to call me. I thank you for your consideration.

Sincerely,

George Miller

GEORGE MILLER
Chairman

cc: The Honorable Nancy Pelosi
The Honorable Steny Hoyer
The Honorable Howard P. "Buck" McKeon
The Honorable John V. Sullivan, Parliamentarian

BART GORDON, TENNESSEE
CHAIRMAN

RALPH M. HALL, TEXAS
RANKING MEMBER

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
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WASHINGTON, DC 20515-6301
(202) 225-6375
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April 5, 2007

The Honorable George Miller
Chairman, Committee on Education and Labor
2181 Rayburn House Office Building
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your letter regarding the consideration of H.R. 362, the "*10,000 Teachers, 10 Million Minds Science and Math Scholarship Act.*" I appreciate your waiving your Committee's right to a referral on this bill so that it may move expeditiously to the Floor.

I recognize your Committee's jurisdiction in this area and will support any request you may make to have conferees on H.R. 362 or similar legislation. The exchange of letters between our two committees will be included in the Committee report on H.R. 362 and will be inserted in the *Congressional Record* during consideration of the bill.

Thank you for your attention to this matter.

Sincerely,

Bart Gordon

Bart Gordon
Chairman

cc: The Honorable John V. Sullivan

XXII. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 362, "10,000 TEACHERS, 10 MILLION MINDS" SCIENCE AND MATH SCHOLARSHIP ACT

WEDNESDAY, MAY 28, 2007

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
Washington, DC.

The Committee met, pursuant to call, at 10:07 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chairman of the Committee] presiding.

Chairman GORDON. Good morning. The Committee on Science and Technology will come to order.

Pursuant to notice, the Committee meets to consider the following measures: H.R. 362, *"10,000 Teachers, 10 Million Minds" Math and Science Scholarship Act;* H. Con. Res. 76, *Honoring the 50th Anniversary of the International Geophysical Year;* and H.R. 252, *Recognizing the 45th Anniversary of John Herschel Glenn Jr.'s Historic Achievement in Becoming the First United States Astronaut to Orbit the Earth.*

We will now proceed with the markup.

Today, we are meeting to markup three bipartisan bills.

I realize that I am starting to sound like a broken record, but I sincerely hope that the Committee on Science and Technology is a place where Members of both parties can come together to get work done on important issues in a bipartisan way.

The important, non-partisan issue of this markup is competitiveness. This is one of the most critical issues facing our nation today. H.R. 362, the *"10,000 Teachers, 10 Million Minds" Science and Math Scholarship Act,* which I sponsored and which my friend, Ralph Hall, co-sponsored, takes a big step forward in dealing with the vital issues.

Together with H.R. 363, which this committee reported out earlier this month, these bills take the recommendations from the National Academy of Sciences *"Rising Above the Gathering Storm"* report, and turn them into real legislation that will make a difference.

In addition to H.R. 362, we are also marking up two other bills.

H. Con. Res. 76 is a resolution honoring the 50th anniversary of the International Geophysical Year, an international cooperative initiative that led to significant advances in space and Earth science, and which was marked by the dawn of the Space Age.

H.Res. 252 recognizes the 45th anniversary of John Glenn's historic space mission, in which he became the first American to orbit the Earth.

The space race of the 1950's and 1960's helped advance—to drive scientific achievement and technological innovation in the 20th century, and it is fitting that today, as we honor the scientific and technological achievements of the past, we are also helping to ensure this country's ability to make these great gains in the future.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Today we are meeting to markup three bipartisan bills.

I realize that I'm starting to sound like a broken record, but I sincerely hope that the Committee on Science and Technology is a place where Members of both parties can come together to get work done on important issues in a bipartisan way.

The important, non-partisan issue of this markup is U.S. competitiveness. This is one of the most critical issues facing our nation today. H.R. 362, the *"10,000 Teachers, 10 Million Minds" Science and Math Scholarship Act,* which I sponsored and Ralph Hall co-sponsored, takes a big step forward in dealing with this vital issue.

Together with H.R. 363, which this committee reported out earlier this month, these bills take recommendations from the National Academy of Sciences *"Rising Above the Gathering Storm"* report, and turn them into real legislation that will make a difference.

In addition to H.R. 362, we are also marking up two other bills.

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H.Res. 252 recognizes the 45th anniversary of John Glenn's historic space mission in which he became the first American to orbit the Earth.

The space race of the 1950's and 1960's helped to drive scientific achievement and technological innovation in the 20th century.

It is fitting that today, as we honor the scientific and technological achievements of the past, we are also helping to insure this country's ability to make these great gains in the future.

Chairman GORDON. I recognize Mr. Hall to present his opening remarks.

Mr. HALL. Mr. Chairman, I thank you, of course, as usual, as normal, for calling this markup today.

We have before us three measures, as you have stated, and a very important piece of innovation and competitiveness agenda that targets improving the caliber of our future K–12 math and science teachers and two space-related resolutions.

With regard to H.R. 362, I am very pleased to see us considering the bill. It has many of the elements that this committee passed last year. As I have stated before, I am especially pleased to see that we are using the University of Texas's UTeach program for the basis for a scholarship program for STEM students who commit to teaching K–12 science and math classes after graduation.

Now I understand that there will be an amendment in the nature of a substitute offered to H.R. 362, which includes agreed-upon improvements to the bill.

Mr. Chairman, I really do thank you for working with our side, as you have always done, on making these improvements, not only to the underlying measure, but also with regards to H.R. 524, the *Partnership for Access to Laboratory Science Act,* which I believe is also going to be offered as an amendment to H.R. 362.

Okay. With that, I yield back my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman, thank you for calling this markup today. We have before us three measures: an important piece of the innovation and competitiveness agenda that targets improving the caliber of our future K–12 math and science teachers and two space-related resolutions.

With regard to H.R. 362, I am pleased to see us considering a bill that has many of the elements that this committee passed last year. As I have stated before, I am especially pleased to see that we are using the University of Texas UTeach program as the basis for a scholarship program for STEM students who commit to teaching K–12 science and math classes after graduation.

I understand there will be an amendment in the nature of a substitute offered to H.R. 362 which includes agreed upon improvements to the bill. I thank the Chairman for working with our side on making these improvements not only to the underlying measure, but also with regards to H.R. 524, the *Partnerships for Access to Laboratory Science Act,* which I believe is also going to be offered as an amendment to H.R. 362. I recognize the hard work that Ms. Johnson and Dr. Ehlers have made in ensuring that the areas where NSF has real expertise are prioritized. I would have preferred to have seen statutory language prohibiting federal funding from being used for the purchase of lab equipment and the maintenance of lab facilities in this amendment. I appreciate the willingness of the majority to work with us to ensure that report language is strongly worded to emphasize that it is the Committee's intent for the non-federal partners to provide the funding for equipment and facility maintenance and improvements.

Chairman GORDON. Thank you, Mr. Hall, for your support of the bill and, more importantly, for your good additions to make a good bill even better.

Without objection, Members may place statements in the record at this point.

[The prepared statement of Ms. Hooley follows:]

PREPARED STATEMENT OF REPRESENTATIVE DARLENE HOOLEY

Mr. Chairman, I move to strike the requisite number of words.

Thank you, Mr. Chairman. I wanted to speak briefly in support of this legislation, H.R. 362, and applaud you for your leadership in bringing this important legislation before the Full Committee.

As we all know, the idea for this legislation was included in the Augustine Report that was compiled by the National Academies of Science. The Report identified this initiative as being the most important step to increase America's talent pool by vastly improving K–12 science and mathematics education.

As the Members of this committee know, the key to the United States maintaining its position at the forefront of global innovation and technology is to get more students interested in the STEM fields.

Our nation's economic vitality is derived in large part from the productivity of well-trained people and the steady stream of scientific and technical innovations they produce.

After years of inattention and neglect, this legislation is an important first step towards a re-investment in our nation's STEM education. And it will in turn positively benefit the American Competitiveness Initiative.

Once again, I applaud the Chairman for his leadership on this issue and I urge my colleagues to support this legislation.

Thank you and I yield back the balance of my time.

[The prepared statement of Mr. Mitchell follows:]

PREPARED STATEMENT OF REPRESENTATIVE HARRY E. MITCHELL

Thank you, Mr. Chairman.

I taught high school in Arizona for 28 years, and I know that my fellow teachers work hard and do a good job with the resources they have.

But I was also a State Senator for eight years, and I know our schools need help. Arizona's students are below the national averages in every subject area. On average, Arizona's teachers teach six children more per class than the national average.

That's a problem.

Arizona must increase the number of highly qualified teachers and lower the student to teacher ratio.

As a former educator, I understand first-hand the impact education that has on our children and their future. I appreciate Chairman Gordon's leadership on this issue, and I am pleased to see the Chairman's legislation works to increase the number of qualified science and math teachers.

Ensuring that our students receive a first-rate education is vital not only to Arizona's but our nation's future. As a former teacher, I believe that if we want to successfully compete and prosper in the 21st Century, we must make education a national priority.

The National Academy of Science was asked how the United States can accomplish this goal. Their report, *Rising Above the Gathering Storm,* recommends action to recruit highly qualified science and math teachers and implement programs to strengthen the skills of our current teachers.

I wholeheartedly agree.

To continue to compete in the global economy we need to increase the number of science and technology graduates and our schools need the resources to successfully educate our children.

Today, we are considering a bill to address this issue and I look forward to working on it.

I yield back the balance of my time.

Chairman GORDON. We will now consider H.R. 362, *"10,000 Teachers, 10 Million Minds" Science and Math Scholarship Act,* and I yield myself five minutes to describe this bill.

In 2005, the National Academies, and I might add, at the request of Chairman Sherry Boehlert and myself, assembled a Blue Ribbon Committee to address concerns about the national prosperity and the global economy of the 21st century. This committee was chaired by Norm Augustine and was comprised of a broad spectrum of national leaders in academia, industry, and government. The Committee's report was entitled *"Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future."* That report, which was released in its present form just three weeks ago, presents recommendations that the Nation must follow to maintain its competitiveness in a global economy.

And what is the highest-priority recommendation of the report? What did this distinguished committee tell us is most important for the future economic health of our nation?

Here is the first recommendation from the report: "Increase America's talent pool by vastly improving K–12 science and mathematic education." And that is what H.R. 362 will do.

The *Gathering Storm* report goes on to tell us where the focus should be in efforts to improve K–12 science and mathematic education. In brief, it says focus on the teachers. And that is what H.R. 362 will do.

The bill implements all the action items from the *Gathering Storm* report that address the report's first recommendation. The bill will create thousands of new teachers with content and expertise in teaching in their area—or their area of teaching via the North Scholarship Program at NSF. The bill will create summer institutes and graduate programs that provide sustained, content-oriented, professional development to teachers through math-science partnerships at the NSF, and the bill will create centers for improvement of undergraduate education in STEM fields via the STEP program at NSF.

To maintain our nation's high standard of living, we will need to sustain our world-class science and technology enterprise that creates innovative, new products and high-paying jobs. To sustain this

science and technology enterprise, we need to—a workforce that is prepared in a world-class math and science education system.

But American students have performed poorly on an assortment of international tests in math and science achievement. That does not bode well for the future. That is the "gathering storm" on the horizon. To rise above it, we need to reform the math and science teaching profession, and that is what H.R. 362 will do.

The stakes are high, and the concern is urgent, and I urge support of this bill.

And let me also put the Members on notice that this bill is supported by, you know, so many folks, that it is really hard—and I am not going to go over all of them, but the Business Roundtable, the—excuse me, you know, every kind of math and science and education, physics group that there is has—and this—I am just going to read you some of the ones that are sort of interesting: the American Society for Heating, Refrigerating, and Air Conditioning Engineers, I mean, this cuts across a lot of folks; the Business Roundtable; the Association of Community Colleges, the Hispanic Association of Colleges and Universities, every kind of teacher group, the Semiconductor Industry Association. There is just an enormous amount of support for this bill.

And let me also say that when Norm Augustine first spoke to us, I mentioned to him that what he brought to us wasn't particularly ground-breaking. He didn't bring us any new ideas. All he did was take what we know and what has been told to us over and over and made a compilation. And this bill, my bill, is not very creative, either. I even plagiarized the name that he used: "10,000 Teachers for 10 Million Minds."

So we are not trying to break new ground here. We are just trying to act on what we know needs to be done.

And I recognize Mr. Hall to present any remarks on his own—any of his remarks on the bill.

Mr. HALL. Mr. Chairman, I just, once again, want to thank you and your staff for working with our staff in improving the underlying bill.

I yield back.

Chairman GORDON. Does anyone else wish to be recognized?

Mr. ROHRABACHER. Mr. Chairman?

Chairman GORDON. Yes, Mr. Rohrabacher.

Mr. ROHRABACHER. First of all, let me add, this bill we are talking about basically provides scholarships for students who would then teach in high school and other mathematics and science courses, is that right?

Chairman GORDON. Well, it does a couple of things. One, it does provide competitive scholarships for students that will go into math, science, and education and agree to teach for five years.

Mr. ROHRABACHER. Agree to teach for five years.

Chairman GORDON. Right. In addition to that, it provides stipends for existing math and science teachers to come back to school in the summer and get their certification.

The reason for that is it is amazing to think about this, but over 50 percent of the math teachers in K–12 have neither a major or a certification to teach math. Ninety-two percent of the physical science teachers have neither a major or a certification to teach

physical science. So that is—you know, that is a big part of it. As Mr. Hall points out, we also use the University of Texas's well-documented success in curriculum in trying to do this, also.

So that is the thrust of it.

Mr. ROHRABACHER. Well, as you know, Mr. Chairman, I have—I support the concept of scholarships in exchange for service, which I consider to be a twofer and something that would be very justifiable. And I am likely to support this legislation.

However, let me just note that providing scholarships is, in reality, another form of remuneration. I mean, this is what—this is another form of providing a benefit for someone in order to pay them for a service. And of course, I have tried to put that to work here for the Federal Government, NASA and others, saying that they can have scholarship programs providing for young people who will then work for NASA or that government agency.

But in this case, when we are talking about public education, let us remember that as we provide this remuneration for science and math teachers, it is because we are having to do this and the shortage that exists, exists because of policies by the education establishment that all teachers, no matter what they are teaching, have to make the same pay. And overnight, this problem in our country could be solved if we simply stepped back from this policy and the political people in this country did not support this nonsensical theory that someone who is teaching gymnastics in sixth grade has to earn as much as a sixth grade science teacher or basket weaving or home economics or whatever that is, that there are a lot of classes that can be taught, there are a lot of people waiting to teach social sciences in these schools, like history and other things, which, by the way, have a value to them. But right now, we have a shortage, and we are not permitted to pay mathematics and science teachers more money, and that is why we have this shortage.

Now we are making up for that. This is—and I will likely, as I say, support the bill. But let us not forget that the fundamental problem is being caused by a nonsensical policy that should be changed at the local level.

And that is what I have to say about it.

Chairman GORDON. Thank you, Mr. Rohrabacher. I have heard your basket-weaving speech before. We don't have jurisdiction on that in this committee, but we—this is a, for lack of a better term, I think, a back-door way to approach it. The five years is important, because half of teachers drop out in the first five years, and so there will be a mentoring program, also, to keep them there.

But thanks for your good comment.

Is—does anyone else like to be recognized?

Ms. Hooley.

Ms. HOOLEY.—very—oops. Thank you for turning on my mike.

Briefly, in support of this legislation, as a former teacher and also watching my children go through high school and how difficult it was to find, particularly math, teachers in the high school level, people that were willing to teach math. This has been a problem for a long time, and as we know, the Augustine report says that this is an important thing to do.

So I think we have to do this where we just have to increase that talent pool by improving K–12 science and math education. If we

are going to maintain our front in innovation and technology, we have to get more students interested in the STEM fields.

Our Nation's economic vitality is derived, in a large part, from productivity of well-trained people and the steady stream of scientific and technical innovations they produce.

After years of inattention and neglect, this legislation is a critical first step towards reinvestment in our nation's STEM education. It will, in turn, positively benefit the American Competitiveness Initiative.

And once again, I applaud the Chairman for his leadership on this issue, and I urge my colleagues to support it.

Thank you. Thanks for your hard work.

Chairman GORDON. Thank you. I didn't realize you were a teacher. What subject?

Ms. HOOLEY. I taught high school, and I taught music, teaching—I mean reading, physical education, science, health——

Chairman GORDON. Okay.

Ms. HOOLEY. I was at a small school.

Chairman GORDON. You were a renaissance teacher.

Ms. HOOLEY. And I couldn't decide what I wanted to do when I grew up.

Chairman GORDON. Mr. Bilbray is recognized for five minutes.

Mr. BILBRAY. Yes, Mr. Chairman.

I—you know, first of all, let me make a comment that Mr. Rohrabacher and I don't agree on a lot of things, but I think, in all fairness, even though it is not our committee——

Chairman GORDON. A lot of folks don't agree with Dana on a lot of things.

Mr. BILBRAY. Dana and my disagreements usually happen when we are out surfing, but that is a different story.

But I mean, we shouldn't just pass over his statement about the fact that the educational institutions have a—government has a quasi-monopoly on this range to such—you know, the monopoly is so large that there is an impact on this idea. And his concept of us at least raising the issue, and we should raise it to our friends that are in the teachers associations and stuff about the fact that this one-size-fits-all salary just does not reflect the reality out there, and they have got to rethink. And I think that we should be the voices and the willingness to raise this, Democrats or Republicans.

So I think he gets—I think he, really, has said a good point that none of us want to talk about or think about, and I think if we really care about this issue, we at least have got to be willing to broach that and raise that issue. And I—that is a huge leap, I understand.

But going back to the original bill, one of the opportunities, I think, we have missed from—learning from history is a great, great contribution that the GI bill made, not just to the veterans but to the educational institutions, because they were taking people that were coming out of a real-world experience, not just walking out of educational institutions, and bringing that experience into the classroom with their degree to be able to teach. And I would really love to see us really understand and work with the Veterans Committee, which I happen to serve on, that—looking at a GI bill that

really encourages our veterans to go back into education and then stay in education and get back in and teach our kids, because I just think the benefit of education, of having people that have not just spent their whole life in a—in the educational environs. It really, really can be reflected in the successes that we had in the past, especially during the 1960s and that period.

So I would—I will support the bill, but I would just ask all of us to look at ways, as we talk about taking care of the veterans that are coming back from this conflict, one way they can—we can serve them and serve our children of the future is to try to have—formulate a strategy to get them involved in the educational institutions.

And I yield back, Mr. Chairman.

Chairman GORDON. Mr. Bilbray, as we deal with other competitiveness issues and these types of issues later in this Congress, when appropriate, we would welcome for you and Dana or anyone else to—if you want to bring a witness to be a part of a panel to discuss a disparity in salaries, we would welcome you participating in that way.

Mr. BILBRAY. And, Mr. Chairman, let me clarify. I actually, you know, studied and wanted to be a history teacher, but I couldn't pull the academics, so I ended up getting stuck in Congress instead.

Chairman GORDON. All right. Well, you are in good company.

Mr. McNerney is recognized.

Mr. MCNERNEY. Thank you, Mr. Chairman.

And thank you, the Ranking Member and all of the staff, for putting together this bill.

Education is dear to me. I have a Ph.D. in math, and I have to say that those are some of the finest years of my life studying mathematics and enjoying the beauty of it.

And what I would like to do is see that more young people appreciate not only the power and effectiveness of mathematics, but also—and science, but also the beauty and the power that this brings to your life.

Education is, really, an investment in our future, and education—the investment we put into education is paid back ten-fold by the contributions that individuals that are highly educated and appreciate that education contribute back to society. So it is not just something that we remunerate. It is something that we invest. It is something that we get paid back for.

And it is also a responsibility, because as we look at the educational performance of our children and we see that they are falling behind and that there are countries out there that are putting out this investment on their children, and—they are going to be outperforming us in the future, as I know we are all aware of. I did make an effort to finish the *"Rising Above the Gathering Storm,"* and I am really only about a third or halfway through it, but I certainly see the need.

And I urge all Members to support this bill. It is very important to our nation. It is very important to our future.

Thank you. I yield back.

Chairman GORDON. Dr. Gingrey is recognized.

Mr. GINGREY. Mr. Chairman, thank you. I got here so early this morning I just felt like I had to say a word or two.

But in regard to the comments on my side over here, Mr. Rohrabacher and Mr. Bilbray, I think they bring up a good point.

But the purpose of the bill—and I would say that we really need to do both. I think we need to do exactly what Dana had suggested. But in regard to this bill, I think what we need to keep in mind is we are trying to "rise above the gathering storm," Mr. Chairman, as you pointed out. And it is not just a matter of trying to improve math and science engineering education and giving teachers an opportunity, incentivize them to do that and to go back into the classroom, but the purpose is to excite our young students at the K–12 level to go on and pursue a career themselves in math and science and engineering. They, themselves, likely, might not go into teaching, but they go into industry and innovation and help this country "rise above the gathering storm." So that is what it is all about.

And I—Mr. Chairman, I commend you for it. It is a great bill, and I am fully supportive, and I yield back.

Chairman GORDON. Thank you, Dr. Gingrey.

And let me also point out that the purpose of the—as you said, the purpose of the bill is to get those teachers that know their subjects so they can inspire kids. But it is not just to create a few Dr. Ehlers, you know, or in terms of real top-notch, investigative scientists. It is so that those folks getting out of high school can work at a higher level and get a better job and understand what is going on. I mean, that is what 95 percent of this is just helping everyday people be able to work more productively and get a better job.

Anyone——

Mr. BAIRD. I just would echo that, Mr. Chairman.

I had a series of hearings—actually meetings in my district two weeks ago with members of the National Science Foundation, the Superintendent of Public Instruction, and I think the gentleman from California made excellent points about this, about the need for pay differentials.

But your point about making sure people can get jobs, I spoke with a major employer, prepared to invest a couple hundred million dollars in my community, bring 200 new jobs, but they lack the ability to find people who could just add positive and negative numbers, do a scatter plot, calculate an average, understand what a standard deviation meant. That rudimentary knowledge was potentially costing us $200 million of investment and 200 new jobs. And it wasn't that that investment wasn't going to go somewhere. It was going to go somewhere. Those jobs were going to go somewhere. The question was, would they be in America or overseas. If we can't answer the question affirmatively that we have the human resources who are educated to do this kind of basic work, we will lose the jobs, and we will lose our competitiveness.

And I applaud you for your leadership. I can tell you, the people back home who employ students who graduated without adequate understanding of science and math applaud you as well. They are grateful to see this, that, on a bipartisan effort, we are coming together to solve this problem, and I celebrate your work.

Chairman GORDON. Thank you, Dr. Baird.

Let me—again, let me say that all I did was plagiarize this report, and I think most all of you are co-sponsors of this, so you know, you are as much responsible as I am, and everybody should go home and take credit for this.

Mr. BAIRD. Are we called "plagiarizers" as well? That didn't work for Senator Biden a few years ago. I——

Chairman GORDON. We are acknowledging it.

Dr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman.

Just a few comments to follow-up the earlier comments.

But first of all, it is—none of us are planning to run for President, and so I think we can get by with plagiarizing.

Secondly, I was somewhat relieved when Ms. Hooley was giving the list of the things she taught that she didn't come up to basket weaving, or we might have had a little problem here.

I also want to thank Dr. McNerney for his comments, because what we really want to do in the math and science instruction is to have the students reach the point that he was talking about, where—the subject of the intrinsic beauty of mathematics and science becomes apparent to the student, and that is when they really begin enjoying it and start to consider it as a career. And it takes a uniquely-qualified teacher to be able to bring that forward and to share that experience with the students. And that is what we are all about here, trying to develop good teachers. And once they reach that point where they can share that beauty with the kids and enjoy it themselves, they are likely to stay in the teaching profession.

And in regard to the comments of Mr. Rohrabacher, I have argued for years in my speeches that there should be a pay differential for math and science teachers, and perhaps for some others. I fail to understand why the largest—one of the largest institutions in our society should be expected to deviate from the norms of our society, which is free enterprise and entrepreneurship and payment according to ability and what one brings to the job. We are—our entire economy is based on that precept, and yet, we get into the schools, everyone is supposed to be paid the same. And part of it is simply because the math and science teachers are badly outnumbered by the other teachers, and so you go with the crowd in a situation like that. And the easiest way is to pay everyone the same: no differentiation, no merit. And as a result, the good people tend to leave. The math and science teachers tend to leave because they can get a much higher salary. I think it is essential that we develop a different approach to the payment of teachers if we want to keep these teachers. The retention figures are horrendous, as the Chairman well knows, and especially the retention figures are horrendous for math and science teachers. And we simply have to change that. You have to meet the market in today's world, and that is what we have to do in the schools.

So thank you for bringing this bill forward, Mr. Chairman. I appreciate it. I am happy to be a co-sponsor, and I can't wait to see the results of it.

Thank you.

Chairman GORDON. Thank you, Dr. Ehlers.

Do you think we should extend that hearing to whether Members of Congress should be paid the same?

Mr. EHLERS. Well, since most of us didn't come here for the money, it is probably not a factor. But I think pay differential would be good.

Chairman GORDON. Okay.

I understand that we are going to have—unfortunately, have votes about 10:45, and so we do want to try to—Ms. Woolsey.

Ms. WOOLSEY. Very quickly.

Thank you, Mr. Chairman, for this good legislation, and of course, I support it, but as the mother of "Go Girl" legislation to encourage young girls and young women and their families to put—keep them in math, science, and technology when they are so good at it in the young ages, I believe now that it is beyond just girls. I mean, we can't leave out just 50 percent of our population and expect to catch up with the rest of the world at all and not have a flat economy and a flat world. But I believe this goes beyond "Go Girl." It goes in the right direction, and I am totally supportive of it.

Thank you.

Chairman GORDON. Thank you, Ms. Woolsey.

And if I might, unless something is just burning at you, I would suggest that we try to move forward with this markup so that we—so that it doesn't inconvenience you to have to come back.

Is there—do you want to say how it is going to affect Arizona?

We will deal with that in a moment. Okay.

I ask unanimous consent that the bill is considered as read and open to amendments at any point and that Members proceed with the amendments in the order of the roster. Without objection, so ordered.

The first amendment on the roster is the Chair's amendment offered in the nature of a substitute. I ask unanimous consent that the amendment be—in the nature of a substitute be treated as original text for purposes of the amendment under the Five-Minute Rule.

Without objection, so ordered.

The Clerk will report the amendment.

The CLERK. Amendment in the nature of——

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, no offense, so ordered.

The CLERK. None taken.

Chairman GORDON. I recognize myself for five minutes to explain the substitute amendment.

This amendment, which has been developed in a bipartisan manner, and which I authored with Ranking Member Hall, incorporates several small improvements to the original bill. The main changes make the following—and let me—I am going to summarize this very quickly.

Our Republican friends, as well as different folks in outside groups, came to us with suggestions, things like the Noyce Scholarship should be—have a five-year period rather than a four-year period. Basically, we have a number of these small, little changes. I

will be happy to go over them in more—if anybody would like to, but it has been well-vetted by the minority.

So if there are no specific changes, then I will say, is there any further discussion to the amendment?

Mr. Hall.

Mr. HALL. Mr. Chairman, I just, once again, want to thank you and your staff for working with our staff to improve the underlying bill.

I yield back to you.

Chairman GORDON. Thank you, Mr. Hall.

The second amendment on the roster is offered by the gentlelady from Texas, Ms. Johnson.

Are you ready to proceed with your amendment?

Ms. JOHNSON. Yes.

Thank you, Mr. Chairman.

Chairman GORDON. The Clerk will——

The CLERK. Amendment offered by——

Chairman GORDON. Once again, I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

The gentlelady is recognized for five minutes to explain her amendment.

Ms. JOHNSON. Thank you very much, Mr. Chairman, and I thank the Committee for considering this important legislation.

This amendment incorporates an important policy objective originating from my dear friend and colleague. And Dr. Ehlers joins me in co-sponsoring. He is not a Member of this committee, however he has offered this several times.

This provision is called the PALS Act, which stands for Partnerships for Access to Laboratory Sciences. And it exists independently as H.R. 524. It is supported by the American Chemical Society, National Science Teachers Association, and others. It would award grants to partnerships that have a high-needs school or college or university or a business or a non-profit organization to—the grant is to be used for teacher enhancement, laboratory equipment, curriculum development, and other elements to give high-needs schools what they need to lessen the achievement disparities that currently exist.

As a witness at the March 8 Subcommittee hearing, there was testimony saying there are many schools in this Nation that don't have science labs, and many schools don't have teachers whose backgrounds are strong enough to do their jobs well. Dallas, Texas has quite a high-needs school, but we also have shining examples of successful partnerships. One of the best high schools in the Nation is located in a high-need area. The science and engineering magnet has its own electron microscope for student research and fully-equipped engineering and robotic labs capable of college-level experiments.

In 1999, Texas Instruments, working with engineering professors at Southern Methodist University, helped design the first high school engineering course in the Nation that incorporates the fundamentals of digital signal processing in at the science and engineering magnet in the Dallas Public School system. The partnership with TI enables students to see firsthand how science, math,

and technology come together to create cool products like Sony music chips. The project has been expanded and demonstrates impressive results in keeping students interested in technology careers. There are many other good things to say about them. It was listed as the number one public high school by several magazines last year. And TI has just been phenomenal in its support.

So I request permission to submit this additional information to the record and ask for the adoption of this amendment.

Thank you.

[The prepared statement of Ms. Johnson follows:]

PREPARED STATEMENT OF REPRESENTATIVE EDDIE BERNICE JOHNSON

Thank you, Mr. Chairman, and I thank the Committee for considering an amendment offered jointly by me and by Dr. Ehlers, Ranking Member of the Subcommittee on Research and Science Education.

This amendment incorporates an important policy objective originating from my dear friend and colleague, Mr. Ruben Hinojosa, who is not a Member of this committee. The provision is called the PALS Act, which stands for "Partnerships for Access to Laboratory Sciences." The PALS Act exists independently as H.R. 524.

Supported by the American Chemical Society, the National Science Teachers Association and others, the PALS program would award grants to partnerships that include:

- a high need school
- a college or university, and
- a business or nonprofit organization.

The grant monies are to be used for teacher enrichment, laboratory equipment, curriculum development and other elements to give high-need schools what they need to lessen the achievement disparities that currently exist.

As witnesses at the March 8th Subcommittee hearing testified, there are many schools in this nation who don't have science labs. Many schools don't have teachers whose backgrounds are strong enough to do their jobs well.

Dallas, Texas, has quite a few high-need schools. But we also have shining examples of successful partnerships.

Townview is one of the best high schools in the Nation—and it is located in a high-need area. The Townview Science and Engineering Magnet School has its own electron microscope for student research and fully equipped engineering and robotics labs capable of college level experiments.

In 1999, Texas Instruments, working with engineering professors at Southern Methodist University, helped design the first high school engineering course in the Nation that incorporates the fundamentals of digital signal processing at Townview Science and Engineering Magnet in the Dallas Public School system.

The partnership between T.I. and Townview enabled students to see first-hand how science, math and technology come together to create cool products, like Sony Music clips. The project has been expanded and demonstrates impressive results in keeping students interested in technology careers.

There are many other good things to say about Townview. . .and T.I., and I request permission to submit this additional information into the Record, Mr. Chairman.

I want to note to the Committee that the PALS provision was, unfortunately, reduced to a "demonstration grant," rather than the full-scale initiative originally intended by Mr. Hinojosa.

However, one advantage is that it gives NSF greater freedom to implement the pilot program and an opportunity to evaluate what strategies work, and may be scaled-up later on.

Dr. Ehlers has been a strong partner in our efforts to lessen the achievement gap in our nation's high-need schools. I thank him for his advocacy and collaboration.

Dr. Ehlers and I aim to try to address the disparity issue with Mr. Hinojosa's provision today. I want thank all of the staff who spent time negotiating the provisions of this amendment, especially those representing Hinojosa, Gordon, Hall, Ehlers, and myself. Thanks also to Subcommittee Chairman Baird for his tireless support on the high-needs schools and disparities issues.

Finally, I thank the Chairman and Ranking Member for consideration of this amendment and urge my colleagues to support it.

Thank you, Mr. Chairman. I yield back.

Chairman GORDON. Without objection, so ordered.

Dr. Ehlers, you were a major part of this amendment. Would you like to say amen?

Mr. EHLERS. Yes. Amen.

If I may, I would like to say a little more, although, since you are concerned about the time——

Chairman GORDON. Dr. Ehlers, I have been informed that the vote is pushed back a little bit later than 10:45, so please—you——

Mr. EHLERS. All right. So I will ask unanimous consent for the majority—my statement to be entered into the record, and I will try to summarize it.

This is a bill that I worked on and introduced last year, and we are pleased to see it incorporated into this section.

One hundred and fifty years ago, this bill would not have been necessary, perhaps not even a hundred years ago, because most everyone lived on the farm, and on the farm you learn some basic ideas of mechanics and science.

But in today's world, we need laboratory science in the schools. Children have to have that experience. I personally think they should have it at every grade level from pre-school through grad school.

This bill is an attempt to introduce lab science in the high schools, make certain that every student has an opportunity to experience laboratory science, to actually sit and do experiments with real equipment on real objects, and that is essential to their experience if they are going to continue in science and to thoroughly learn science.

One other point I would mention, recent research by Carl Wieman, who has testified before this committee a number of times, is a Nobel Prize winner from the University of Colorado, and he has done extensive research in this and is finding that simulations can also be a very effective way of teaching laboratory experience. So that is something I hope the National Science Foundation could pursue as well.

But this bill will give teachers training and professional development on how to use laboratories, how to teach laboratories properly, and will provide some funding for—particularly in schools without the means to have laboratories.

So I unanimously request the rest of the statement be entered into the record, and I strongly support this amendment.

Thank you.

[The prepared statement of Mr. Ehlers follows:]

PREPARED STATEMENT OF REPRESENTATIVE VERNON J. EHLERS

I am very pleased that, early in this session, my colleagues, Representative Hinojosa and Representative Johnson, introduced a bill to improve high school laboratory science, particularly for those in highest need. This amendment is essentially that bill with some small changes.

Last year the National Research Council's report on the state of high school laboratory science made it very clear that if U.S. high schoolers today are lucky enough to have any laboratory experience it is probably not a very good one. Furthermore, many students start college with no laboratory experience and are subsequently less likely to pursue science degrees. The report also established that there is very little research on the subject of successful laboratories. It is my hope that these pilot

projects will help to add to the research available to schools interested in adding or improving laboratory science.

I want to thank my colleagues for including in this amendment a requirement for professional development to be a part of every high school laboratory grant. The Research and Science Education Subcommittee heard from witnesses two weeks ago who emphasized—as this committee has frequently heard—the importance of a well-trained teacher. It is my belief that any high school laboratory will only be successful if the teacher is given special training to teach laboratory science.

I believe the intent of this amendment meshes well with the goals of the Chairman's bill (H.R. 362) and I am pleased to support both.

Chairman GORDON. Thank you, Dr. Ehlers. You are a great value added to this committee.

Is there further discussion on the amendment?

Mr. Hall is recognized.

Mr. HALL. Mr. Chairman, I will be very brief.

I recognize the hard work that Mrs. Johnson and Dr. Ehlers have made in an area where NSF has real expertise to prioritize the—I would have preferred to have seen statutory language prohibiting federal funding from being used for the purchase of lab equipment and the maintenance of lab facilities in this amendment. However, I appreciate the willingness of you to work with us and the majority to work with us to ensure that report language is strongly worded to emphasize that it is the Committee's intent for the non-federal partners to provide the funding for equipment and facility maintenance and improvements.

So I think that is something that would be very helpful.

I yield back my time.

Chairman GORDON. Mr. Hall, you certainly have our commitment on that.

Is there further discussion on the amendment?

If not, the vote occurs on the amendment. All in favor, say aye. Those opposed, no. The ayes have it. The amendment is agreed to.

The third amendment on the roster is also offered by the gentlelady from Texas, Ms. Johnson. Are you ready to proceed with your amendment?

Ms. JOHNSON. Yes.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment offered——

Chairman GORDON. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

Ms. JOHNSON. Thank you, Mr. Chairman.

The amendment I am offering today——

Chairman GORDON. The gentlelady is recognized for five minutes. Excuse me.

Ms. JOHNSON. The amendment I am offering today deals with Section 205 of H.R. 362. The section addresses the STEM Talent Expansion Program, called the STEP program. STEP aims to encourage colleges and universities to increase the number of STEM graduates at the higher-education level, particularly under-represented minorities. Grant funds may be used to promote interdisciplinary teaching, undergraduate research and mentoring initiatives, bridge programs to help students at community colleges transfer credits into the program, and other important projects.

The law is currently written so that NSF must "strive to increase the numbers of STEM graduates who are women, minorities, and individuals with disabilities." This program is important, because

I live right in the midst of a number of needs. The majority of my constituents in Dallas are under-represented in STEM fields. Twenty percent of the public school student body have access to the school I just spoke of, but eighty percent do not, and they need encouragement to make it through in an education system filled with obstacles, no pipeline, and little hope. And my amendment would make a small addition to the text of Section 205 that would make a big difference to me and my constituents. And it states that in awarding grants for this program, the NSF Director shall endeavor to ensure that a wide variety of science, technology, engineering, and mathematic fields and types of institutions of higher education, including two-year colleges, are covered. My amendment changes the language to say "including two-year colleges and minority-serving institutions." Minority-serving institutions are historically black colleges and universities, Hispanic-serving institutions, tribal colleges and universities, and institutions that serve Asian American and Pacific Islanders and persons with disabilities. Hometown examples of a Texas college that Mr. Hall has served on the Board, the Texas Southern University, Laredo College, and there are probably over 50 minority-serving institutions in Texas alone. My amendment calls greater attention to the minority-serving institutions in an effort to give them a fair chance to apply for a STEP grant.

As I said, Mr. Chairman, this is a small change, and I encourage my colleagues to support this provision aimed at diversifying a highly-skilled STEM workforce.

And I might also add, Mr. Chairman, that that is one of the reasons why I agree with Mr. Rohrabacher, because we have—most of our teachers do not have a major in the subjects in which they teach. That does not speak well for the areas that we have the greatest need.

I thank you very much, and I hope I will get support for this amendment.

[The prepared statement of Ms. Johnson follows:]

PREPARED STATEMENT OF REPRESENTATIVE EDDIE BERNICE JOHNSON

Thank you, Mr. Chairman.

The amendment I am offering today deals with Section 205 of H.R. 362, the Section addressing the STEM Talent Expansion Program, called the STEP program.

STEP aims to encourage colleges and universities to increase the number of STEM graduates at the higher education level, particularly under-represented minorities.

GRANT FUNDS MAY BE USED TO PROMOTE

- interdisciplinary teaching,
- undergraduate research,
- mentoring initiatives,
- bridge programs to help students at community colleges transfer credits into Bachelor's programs,
- and other important projects.

The law is currently written so that NSF must, quote, "strive to increase," the numbers of STEM graduates who are women, minorities, and individuals with disabilities.

This program is important to me. The majority of my constituents in Dallas are under-represented in STEM fields, and they need encouragement to make it through an education system filled with obstacles, no pipeline, and little hope.

My amendment would make a small addition to the text in Section 205 that would make a big difference to me and my constituents.

Section 205 states that, "in awarding grants for this program, the NSF Director shall endeavor to ensure that a wide variety of science, technology, engineering and mathematics fields and types of institutions of higher education, including two-year colleges, are covered."

My amendment changes the language to say, "including two-year colleges and minority-serving institutions."

"MINORITY-SERVING INSTITUTIONS" ARE

- Historically Black Colleges and Universities,
- Hispanic Serving Institutions,
- Tribal Colleges and Universities, and
- institutions that serve Asian Americans and Pacific Islanders and persons with disabilities.

Hometown examples are Paul Quinn College in Dallas; Texas Southern University in Houston; Laredo College. . .there are nearly 50 MSIs in Texas alone.

My amendment calls greater attention to MSIs in an effort to give them a fair chance to apply for a STEP grant.

As I said, Mr. Chairman, this is a small change, and I encourage my colleagues to support this provision aimed at diversifying our highly-skilled STEM workforce.

Thank you, Mr. Chairman. I yield back.

Chairman GORDON. Thank you, Ms. Johnson.

Would anyone else like to be recognized on that amendment?

If not, I want to recognize myself for just a moment.

You know, I think that every Member of Congress brings different sets of experiences to Congress, and because of that, we are able to make better decisions and those life skills. I think any type of group can make better decisions when you have a diversity of backgrounds. And that is the reason, when we tried to put together our majority staff, that we reached out to minorities and to women, and I am telling you, it is—it was tough. We had a difficult time, and we did not do as good a job as I would have liked. And I think it is a real-world demonstration that, particularly within women and minorities, that that is the greatest area for potential that we have in terms of boosting up those folks that want to go into these areas. And I think this is a good amendment, and I commend the gentlelady for bringing it.

And if there are no further discussions, then all in favor, say aye. Those opposed, say no. The ayes have it, and the amendment is agreed to.

Ms. JOHNSON. Thank you very much.

Chairman GORDON. The fourth amendment on the roster is offered by the gentlelady from Arizona, Ms. Giffords.

Are you ready to proceed with your amendment?

Ms. GIFFORDS. Thank you, Mr. Chairman.

I do have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment, and I ask unanimous consent to dispense with the reading. Without objection, so ordered.

The gentlelady is recognized for five minutes to explain her amendment.

Ms. GIFFORDS. Thank you, Mr. Chairman.

Thank you, Ranking Member Hall, for hearing this amendment.

We all sat here just a couple weeks ago to hear from Norm Augustine and members of the panel that spoke about the *"Rising Above the Gathering Storm"* and the problems that we face.

The National Science Foundation's Science, Technology, Engineering, and Mathematics Talent Expansion Program seeks to increase the number of students that are going to be receiving associate degrees, baccalaureate degrees, concentrations, and certificates in STEM fields.

NSF provides grants to institutions of higher education to support certain activities, such as student mentoring, interdisciplinary teaching, undergraduate research, and internships in order to achieve the program's goal.

What I am offering today, Mr. Chairman, is to amend the STEM Talent Expansion Program. The current statute requires NSF to strive to increase the number of STEM graduates among women and minorities who are currently under-represented in those fields, and I think we would all agree that that is important.

But what this amendment specifies is that NSF should also strive to increase the number of STEM graduates among students in secondary schools with high concentrations of children from low-income families. And the purpose of this, Mr. Chairman, Ranking Member Hall, is to help increase participation in STEM fields of students in poor and rural areas and urban regions.

The authors of the *"Gathering Storm"* report stated that they are worried about the future prosperity of the United States, and I believe they meant the entire United States, not just certain areas. So we must increase our number of STEM professionals across the entire country.

They go on to write that half of undergraduate students who enter college, intending to earn a science or engineering major, actually completed a major, as you so—spoke earlier , Mr. Chairman, in one of those fields. Many of those students could have succeeded if they were given enough support in the early days of their undergraduate experience.

So it is clear, to me, that we have to do more to help students who graduate from schools in poor, rural, or urban areas of our country, and the STEM Talent Expansion Program can do just that.

I think we all take seriously the challenges that we have before us as we try to lead in the 21st century.

Again, Mr. Chairman, Ranking Member Hall, my amendment will help students from low-income, rural, and urban areas get the support that they need as well to help pursue an education and a career in science, mathematics, technology and engineering.

And I request the support from Members on both sides of the aisle.

So thank you.

[The prepared statement by Ms. Giffords follows:]

PREPARED STATEMENT OF REPRESENTATIVE GABRIELLE GIFFORDS

Mr. Chairman, I have an amendment at the desk.

Thank you Mr. Chairman.

The National Science Foundation's Science, Technology, Engineering, and Mathematics Talent Expansion Program seeks to increase the number of students receiv-

ing associate or baccalaureate degrees, concentrations, and certificates in STEM fields.

NSF provides grants to institutions of higher education to support activities, such as student mentoring, interdisciplinary teaching, undergraduate research, and internships in order to achieve the program's goal.

What I am offering would amend the STEM Talent Expansion Program.

Current statute requires NSF to strive to increase the number of STEM graduates among women and minorities who are currently under-represented in those fields.

My amendment specifies that NSF should also strive to increase the number of STEM graduates among students from secondary schools with high concentrations of children from low-income families.

My purpose in doing this is to help increase participation in STEM fields of students from poor rural and urban regions.

The authors of the *Gathering Storm* report stated that they are "worried about the future prosperity of the United States" and that we must increase our number of STEM professionals.

They go on to write that fewer than half of undergraduate students who entered college intending to earn a science or engineering major actually completed a degree in one of those subjects. Many of these students could have "succeeded if they were given enough support in the early days of their undergraduate experience."

It is clear that we must do more to help students who graduated from schools in poor rural and urban areas, and the STEM Talent Expansion Program can do just that.

I take this challenge very seriously, and I want to do my part to ensure that we in the United States continue to lead in the 21st century.

Dr. Sue Adams, a Professor in the Math Department at the University of Arizona told me that "our students from poor urban and rural schools must be given the support needed to be successful. Anything less is unacceptable. . .. It is these skills that will arm students with the necessary tools to address the challenges of the rapidly changing technological society."

My amendment will help students from low-income rural and urban areas get the support they need to pursue an education and a career in science, math, technology, and engineering.

Chairman GORDON. Are there further discussions for this good amendment?

If not, then all in favor, say aye. Opposed, no. The ayes have it. The amendment is agreed to.

The fifth amendment of the roster is offered by the gentlelady from Arizona.

Are you ready to proceed with your amendment?

Ms. GIFFORDS. Thank you, Mr. Chairman.

I do have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

The gentlelady is recognized for five minutes to explain her amendment.

Ms. GIFFORDS. Thank you, Mr. Chairman.

Thank you, Ranking Member Hall.

What I am offering here is an amendment to the provision of H.R. 362 that authorizes NSF to support summer teacher institutes. It requires NSF to give priority to grant applications that propose programs that will attract teachers to the summer institutes from high-need school systems, that is schools that have a high concentration of children from low-income families that are—currently experience a shortage of highly-qualified teachers.

During this—doing this will help train teachers from poor, rural, and urban areas to teach challenging courses in math and science, including AP and IB courses.

Let me give you an example, Mr. Chairman and Ranking Member Hall.

I want—I have to talk about Arizona.

I had an education summit out in Cochise County. My district is over 9,000 square miles. Most people recognize the City of Tucson, but there are many other smaller cities in my district, including a town called Bisbee, which used to be the big mining capital of Arizona, and, certainly, of the west.

We had a—one of the top five teachers in the state that came from Bisbee to testify about the fact that her top student that went on to the University of Arizona was told the first week of classes that they would be skipping the first two chapters because they had received that in their AP biology course in high school. And she came before us and she said, "We failed our student," because this student said to the teacher, "I don't know what AP is." The fact that in these rural areas they don't have the teachers that are qualified to be teaching these AP courses is something, Mr. Chairman, I think, that we are all concerned about.

The *"Gathering Storm"* report states that without fundamental knowledge and skills, the majority of students scoring below certain levels that we see around the country is going to provide for the lack of foundation for good jobs and participation across society. We know that low-income students, 70 percent of their middle school math teachers majored in a subject other than math in colleges you so—spoke about, and these numbers are staggering.

So again, getting back to the *"Gathering Storm"* report, it says very bluntly, and I think we take it seriously, accelerated math and science courses are less frequently offered in rural and city schools than in suburban ones. How to achieve an equitable distribution of funding and high-quality teaching should be a top priority issue for the United States.

My amendment, Mr. Chairman, addresses this head on. To remain competitive, we have to address all of the states and all of the areas in our country, and I respectfully ask for support for my amendment.

[The prepared statement by Ms. Giffords follows:]

PREPARED STATEMENT OF REPRESENTATIVE GABRIELLE GIFFORDS

Mr. Chairman, I have an amendment at the desk.

Thank you Mr. Chairman.

What I am offering amends the provision in H.R. 362 that authorizes NSF to support summer teacher institutes.

It requires NSF to give priority to grant applications that propose programs that will attract teachers to the summer institutes from high-need school systems—that is, schools that have a high concentration of children from low income families and that are experiencing a shortage of highly qualified teachers.

Doing this will help train teachers from poor rural and urban regions to teach challenging courses in math and science, including AP and IB courses.

As the results of the 2005 National Assessment of Educational Progress (NAEP) showed us, we must do much more to ensure that our students are learning math and science. Only 36 percent of fourth graders and 30 percent of eighth graders performed at or above the "proficient" level in math. Only 29 percent of fourth graders, 32 percent of 8th graders, and 18 percent of 12th graders performed at or above the "proficient" level in science.

The *Gathering Storm r*eport states that "without fundamental knowledge and skills, the majority of students scoring below this level—particularly those below the "basic" level—lack the foundation for good jobs and full participation in society."

One of the main reasons for this situation in many of our poor rural and urban schools is the lack of math and science content knowledge of our classroom teachers. Most of these same teachers work extremely hard and do their best to teach their students. Too many, however, simply do not have an academic background in math and science.

For low-income students, 70 percent of their middle school math teachers majored in a subject other than math in college. The numbers are truly staggering.

Karen Nicodemus is President of Cochise College, which is in a part of my district that many would consider the Wild West with towns like Tombstone, stated that, "Although the shortage of highly qualified math and science teachers cuts across all education sectors, we should not lose sight of the fact that in rural districts, especially those serving low-income families, the shortage is even more acute and problematic. To engage more students in pursing STEM opportunities, we have to provide teachers with professional development opportunities that will translate into challenging and exciting lessons for our students at all levels. . .. We do a disservice to our brightest high school students, when small, rural schools lack the resources. . .to provide Advanced Placement or higher level math and science classes."

Indeed, the *Gathering Storm* report says bluntly that "accelerated math and science courses are less frequently offered in rural and city schools than in suburban ones. How to achieve an equitable distribution of funding and high-quality teaching should be a top-priority issue for the United States."

My amendment addresses this challenge head on. It will provide more opportunities for math and science teachers in our most challenging schools in rural and urban areas to get the professional development and training they need. Our children will benefit tremendously.

To remain competitive in our 21st century global economy, it is critical that we reform math and science education in America. All children, especially those in our rural and urban schools, should have the opportunity to become leaders in science and engineering.

Chairman GORDON. Thank you, Ms. Giffords, for your value added.

Is there further discussion on the amendment?

If not, the vote occurs on the amendment. All in favor, say aye. All opposed, no. The ayes have it, and the amendment is agreed to.

Are there other amendments?

Mr. AKIN. Thank you, Mr. Chairman.

I have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment, and I ask unanimous consent to dispense with the reading. Without objection, so ordered.

The gentleman from Missouri is recognized for five minutes to explain his amendment.

Mr. AKIN. Thank you, Mr. Chairman.

One of the things, as a guy that has grown up in engineering, I at least have a little bit of understanding of, and that is how fast science and technology moves in our world, how that field is continuously changing and tremendously dynamic. And I thank you, Mr. Chairman, for the excellent bill that you have going here, and I am very supportive of the section. It is Section 204, which says we are going to take a look at the good materials that can be found and used and distributed to help get kids going in math and science.

One thing that would scare me would be if we got to the point, from a government point of view, that we start to freeze everything and say, "Well, you have got to do it this, that, or the other way." My amendment simply says that the recommendations made under this section is not going to be considered some mandate for it has to be done just in a certain way. I think that was implied in the

way it is written. I am very supportive of it, and I really thank the majority party for working with me on this amendment.

Thank you, Mr. Chairman.

Chairman GORDON. Again, thank you, Mr. Akin, for your value added.

Let me just point out that we have a better bill today, because it was vetted. The minority, outside, different various folks have made different recommendations, and we have tried to alter it for that.

This amendment we just received minutes ago, and we—certainly, we want to accept the amendment, but it just makes everybody's job easier to have recommendations earlier so they can be vetted. But again, this is a good amendment, and we will accept it.

Is there anyone else?

Mr. EHLERS. Mr. Chairman?

Chairman GORDON. Dr. Ehlers.

Mr. EHLERS. Just to comment on this, and not to speak against the amendment, but just to clarify some of the issues.

We have—we face a major problem in this nation, because the people and the children are very mobile, and there is one area that we should have a national standard, although I hate to use the word "standard," but that is in the sequencing of topics, because math and science are sequential. And we—you get into a lot of problems because of the variety of math and science programs.

Let me give you some examples.

Suppose you have a student attending a school where fractions are taught in the fall and percentages are taught in the spring. In January, that student transfers because the family moves. He gets—ends up in another school that teaches percentages in the fall and fractions in the spring. That student is going to get a double-dose of fractions and will not learn percentages.

Now there is much to be said for a national agreement. I hate to use the word "standard," but a national agreement about the sequence in which subjects should be taught, so that any student can be assured, and parents can be assured, that whenever they move, their student will fit right into the same sequence, even though it may be taught from a different textbook. At least they will have the same sequence.

And that is something that I am working on separately, perhaps through "No Child Left Behind," but I just wanted to take this opportunity to say we do have a problem by not maintaining a national agreement on that, and we should attack that problem.

Chairman GORDON. Thank you, Dr. Ehlers.

Mr. BAIRD. Mr. Chairman?

Chairman GORDON. Dr. Baird.

Mr. BAIRD. I would like to echo Dr. Ehlers' observation, and he and I have discussed this issue before.

If you look at—if you read the *"Rising Above the Gathering Storm,"* they talk about at least exploring the possibility of a voluntary model national curriculum. If you look at many of the nations internationally who are exceeding our performance on math and science in later grades, they have, precisely, national curricula.

We are, as Dr. Ehlers said, a tremendously mobile society. I have school districts in my district that have 40 percent turnover—schools, rather, individual schools, 40 percent turnover every single year. So we look at AYPs and we look at "No Child Left Behind," et cetera, you have got a school where 40 percent of the kids weren't here last year, meaning they didn't necessarily get the curriculum and sequence that the other kids got. And every time a new child arrives in a new school, that school has to somehow assess where that child should be. Those kids fall out of the sequence of the other kids. There is tremendous inefficiency, and they often feel stupid. They feel left behind. They lack—there is a great word. They lack propaedeutic knowledge. Propaedeutic knowledge is the knowledge that you must have before learning something else. And if you miss that, you fall off the pace line, and I don't think we do those kids a service. And oftentimes, I think those kids are often kids, maybe from, perhaps, less stable families, lower-income families, possibly, who already have three strikes against them. And I don't necessarily—because I don't think it is the intent of the legislation before us today to establish a national curriculum. I don't see this as, necessarily, a harmful amendment, but I would certainly not endorse this if it precluded this committee from discussing the pros and cons of some form of standardized sequence of instruction in the math and sciences so that kids who move across this country, as they do many times, can do so relatively seamlessly. There has got to be enormous expense to our hodgepodge approach to education in this country, an enormous inefficiency, and I think this committee, and possibly the other committees and jurisdiction might want to look at that. I know it is an—people who say, "Well, it is all about local control." I am going to go out on a limb and suggest—I would guess 99.9 percent of the people who advocate against a national standard couldn't name a single school board member in their local control jurisdiction nor could they tell you anything about the sequence of curricula. So we talk about local control as a—that nobody can raise any questions about, but I think if you look at the international competition, they have national curricula, and they follow through that. And I think we ought to at least discuss that.

Chairman GORDON. Thank you, Dr. Baird.

I—counsel informs me that this is a very narrow amendment to a very narrow section, that it would not stop discussion or implementations of sequencing or, for that matter, for general agreement as to how to proceed in a uniform method.

Mr. BAIRD. I respect that. And based on that, I certainly wouldn't oppose it today, but I would urge this committee to raise this as a possible question for exploration, how—just how diverse are our courses across this country, how frequently do students move across educational jurisdictions, what are the costs and benefits of that, and might we not be able to do a better job of meeting those students' needs?

Chairman GORDON. Just like, to a great extent, our parents got one job and stayed there, our kids are in a much different situation. It is a much more mobile society, and those are very good points that are raised.

Are there further discussions—yes, sir.

Mr. SMITH. I would like to just add, as an educator by training and a practitioner for a few years, that I understand the arguments being made. I also would like to suggest that there could be a scenario where a fourth grade class mastered fractions early on, and I would hate to see a class held back from excelling even further because they are tied to a timeline where the professionalism and very good judgment of a highly-trained educator is disregarded in trusting that judgment of whether or not to move ahead. You know. If there is a new student who moves in, I can understand that, and teachers are trained to accommodate that. So I think we should move cautiously when we look at these things, but certainly, I do support the amendment.

Thank you.

Chairman GORDON. Thank you, Mr. Smith.

Are there other—does anyone else have discussion?

If not, the vote occurs on the amendment. All in favor, say aye. Opposed, say no. The ayes have it. The amendment is agreed to.

Are there other amendments to the amendment in the nature of a substitute?

If there is not, the vote occurs on the amendment in the nature of a substitute. All in favor, say aye. All opposed, no. The ayes have it. The amendment is agreed to.

The vote is on the bill, H.R. 362, as amended. All of those in favor will say aye. All those opposed will say no. Excuse me. All of those in favor, say aye. All of those opposed, no. The ayes have it.

I recognize Mr. Hall to offer a motion.

Mr. HALL. Mr. Chairman, I now move that the Committee favorably report H.R. 362, as amended, to the House with the recommendation that the bill, as amended, do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, and that the Chairman take all necessary steps to bring the bill before the House for consideration.

Chairman GORDON. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it. The bill is favorably reported.

Without objection, the motion is reconsidered—to reconsider is laid upon the table. And I move that Members have two subsequent calendar days in which to submit supplemental, minority, or additional views on the measure. I move pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 362, *"10,000 Teachers, 10 Million Minds" Science and Math Scholarship Act,* as amended. Without objection, so ordered.

Let me say that this is—and I thank all of you for your cooperation—this is a high priority for the House leadership. And my understanding, this bill will be up either the first or second week after we return from the recess. And again, I hope all of you will take the credit you deserve.

I want—let me, again, thank all you Members today. This has been another, I think, productive markup, bipartisan, non-partisan,

that I hope that everyone will go home and take credit for it, because you all deserve it.

And I will see you on the Floor probably the first week that we come back.

And the Committee is adjourned.

[Whereupon, at 11:17 a.m., the Committee was adjourned.]

Appendix:

H.R. 362, SECTION-BY-SECTION ANALYSIS, AMENDMENT ROSTER, H.R. 362 SUBSTITUTE AMENDMENT

I

110TH CONGRESS
1ST SESSION

H. R. 362

To authorize science scholarships for educating mathematics and science teachers, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 10, 2007

Mr. GORDON of Tennessee (for himself and Mr. HALL of Texas) introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To authorize science scholarships for educating mathematics and science teachers, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. TABLE OF CONTENTS.

The table of contents for this Act is as follows:

Sec. 1. Table of contents.
Sec. 2. Findings.
Sec. 3. Definitions.

TITLE I—SCIENCE SCHOLARSHIPS

Sec. 101. Short title.
Sec. 102. Findings.
Sec. 103. Policy objective.
Sec. 104. Robert Noyce Teacher Scholarship Program.

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

Sec. 201. Mathematics and science education partnerships amendments.
Sec. 202. Teacher institutes.
Sec. 203. Graduate degree program.
Sec. 204. Curricular materials.
Sec. 205. Science, Technology, Engineering, and Mathematics Talent Expansion Program.

SEC. 2. FINDINGS.

Congress finds the following:

(1) The National Science Foundation has made significant and valuable contributions to the improvement of K–12 and undergraduate science, technology, engineering, and mathematics education throughout its 56 year history.

(2) Under section 3 of the National Science Foundation Act of 1950 (42 U.S.C. 1862), the National Science Foundation is explicitly required to strengthen science, mathematics, and engineering research potential and education programs at all levels.

SEC. 3. DEFINITIONS.

In this Act:

(1) The term ''cost of attendance'' has the meaning given that term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll).

(2) The term ''Director'' means the Director of the National Science Foundation.

(3) The term ''institution of higher education'' has the meaning given that term in section 101(a)

of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) The term "mathematics and science teacher" means a mathematics, science, or technology teacher at the elementary school or secondary school level.

TITLE I—SCIENCE SCHOLARSHIPS

SEC. 101. SHORT TITLE.

This title may be cited as the "10,000 Teachers, 10 Million Minds Science and Math Scholarship Act".

SEC. 102. FINDINGS.

Congress finds the following:

(1) The prosperity the United States enjoys today is due in no small part to investments the Nation has made in research and development over the past 50 years.

(2) Corporate, government, and national scientific and technical leaders have raised concerns that current trends affecting the science and technology enterprise of the Nation could result in erosion of this past success and jeopardize future prosperity.

(3) The National Academy of Sciences, the National Academy of Engineering, and the Institute of

Medicine were tasked in a congressional request to recommend actions that the Federal Government could take to enhance the science and technology enterprise so that the United States can successfully compete, prosper, and be secure in the global community of the 21st century.

(4) The Academies' highest priority recommendation in its report, ''Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future'', is to improve K–12 mathematics and science education, and the Academies' first recommended action item is to institute a major scholarship program to recruit and educate annually 10,000 mathematics and science teachers.

SEC. 103. POLICY OBJECTIVE.

In carrying out the program under section 104, the National Science Foundation shall seek to increase by up to 10,000 per year the number of elementary and secondary mathematics and science teachers in the Nation's schools having both exemplary subject knowledge and pedagogical skills.

SEC. 104. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.

(a) PROGRAM AMENDMENTS.—Section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1) is amended—

(1) by inserting "**TEACHER**" after "**NOYCE**" in the section heading;

(2) in subsection (a)(1)—

(A) by striking "to provide scholarships, stipends, and programming designed";

(B) by inserting "and to provide scholarships and stipends to students participating in the program" after "science teachers"; and

(C) by inserting "Teacher" after "Noyce";

(3) in subsection (a)(3)(A)—

(A) by striking "encourage top college juniors and seniors" and inserting "recruit and prepare undergraduate students"; and

(B) by inserting "qualified as" after "to become";

(4) in subsection (a)(3)(A)(ii)—

(A) by striking "programs to help scholarship recipients" and inserting "academic courses and early field teaching experiences designed to prepare students participating in the program";

(B) by striking "programs that will result in" and inserting "such preparation as is necessary to meet requirements for"; and

(C) by striking "licensing; and" and inserting "licensing;";

(5) in subsection (a)(3)(A)(iii)—

(A) by striking "scholarship recipients" and inserting "students participating in the program";

(B) by striking "enable the recipients" and inserting "enable the students"; and

(C) by striking "; or" and inserting "; and";

(6) in subsection (a)(3)(A) by inserting at the end the following new clause:

"(iv) providing summer internships for freshman students participating in the program; or";

(7) in subsection (a)(3)(B)—

(A) by striking "encourage" and inserting "recruit and prepare"; and

(B) by inserting "qualified as" after "to become";

(8) by amending clause (ii) of subsection (a)(3)(B) to read as follows:

"(ii) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing;";

(9) in subsection (a) by inserting at the end the following new paragraph:

"(4) ELIGIBILITY REQUIREMENT.—To be eligible for an award under this section, an institution of higher education (or consortia of such institutions) shall ensure that specific faculty members and staff from the institution's mathematics, science, or engineering departments and specific education faculty are designated to carry out the development and implementation of the program. An institution of higher education may also include teacher leaders to participate in developing the pedagogical content of the program and to supervise students participating in the program in their field teaching experiences. No institution of higher education shall be eligible for an award unless faculty from the institution's mathematics, science, or engineering departments are active participants in the program.";

(10) in subsection (b)(1)(A)—

(A) by striking "scholarship or stipend";

(B) by inserting "and summer internships" after "number of scholarships"; and

(C) by inserting "the type of activities proposed for the recruitment of students to the program," after "intends to award,";

(11) in subsection (b)(1)(B)—

(A) by striking "scholarship or stipend"; and

(B) by striking "; and" and inserting ", which may include a description of any existing programs at the applicant's institution that are targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;";

(12) in subsection (b)(1), by striking subparagraph (C) and inserting the following:

"(C) a description of the academic courses and field teaching experiences required under subsection (a)(3)(A)(ii) and (B)(ii), including—

"(i) a description of the undergraduate program that will enable a student to graduate in 4 years with a major in mathematics, science, or engineering

and to obtain teacher certification or licensing;

"(ii) a description of the field teaching experiences proposed; and

"(iii) evidence of agreements between the applicant and the schools or school districts that are identified as the locations at which field teaching experiences will occur;

"(D) a description of the programs required under subsection (a)(3)(A)(iii) and (B)(iii), including activities to assist new teachers in fulfilling their service requirements under this section; and

"(E) an identification of the applicant's mathematics, science, or engineering faculty and its education faculty who will carry out the development and implementation of the program as required under subsection (a)(4).";

(13) in subsection (b)(2)—

(A) by redesignating subparagraphs (B), (C), (D), and (E) as subparagraphs (C), (D), (E) and (F), respectively; and

(B) by inserting after subparagraph (A) a new subparagraph as follows:

"(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics and science effectively in elementary and secondary schools;";

(14) in subsection (c)(1)(B), by striking "2 years" and inserting "3 years";

(15) in subsection (c)(3)—

(A) by striking "$7,500" and inserting "$10,000"; and

(B) by striking "2 years of scholarship support" and inserting "3 years of scholarship support, unless the Director establishes a policy by which part-time students may receive additional years of support";

(16) in subsection (c)(4)—

(A) by striking "6 years" and inserting "8 years";

(B) by inserting ", with a maximum service requirement of 6 years" after "was received"; and

(C) by striking "Service required under this paragraph shall be performed in a high-need local educational agency.";

(17) in subsection (c), by adding at the end a new paragraph as follows:

"(5) EXCEPTION.—The period of service obligation under paragraph (4) is reduced by 1 year for scholarship recipients whose service is performed in a high-need local educational agency.";

(18) in subsection (d)(1), by striking "to receive certification or licensing to teach" and inserting "established under subsection (a)(3)(B)";

(19) in subsection (d)(2), by inserting "and professional achievement" after "academic merit";

(20) in subsection (d)(3), by striking "1 year" and inserting "16 months";

(21) in subsection (d)(4)—

(A) by striking "6 years" and inserting "4 years"; and

(B) by striking "for each year a stipend was received";

(22) in subsection (g)(2)(A)—

(A) by striking "Treasurer of the United States," and inserting "Treasurer of the United States."; and

(B) by striking "multiplied by 2."

(23) in subsection (i)(3), by inserting "or had a career in" after "is working in";

(24) in subsection (i)—

(A) by striking "and" at the end of paragraph (4);

(B) by striking the period at the end of paragraph (5) and inserting "; and"; and

(C) by adding at the end the following:

"(6) the term 'teacher leader' 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, for the purposes of training other teacher leaders, to mathematics and science teachers."; and

(25) by adding at the end the following:

"(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950, the Director is authorized to accept donations from the private sector to support scholarships, stipends, or internships associated with programs under this section.

"(k) ASSESSMENT OF TEACHER RETENTION.—Not later than 4 years after the date of enactment of this subsection, the Director shall transmit to Congress a report on the effectiveness of the program carried out under this section regarding the retention of participants in the teaching profession beyond the service obligation required under this section.

"(l) AUTHORIZATION OF APPROPRIATIONS.—Except as provided in subsection (m), there are authorized to be appropriated to the Director for the Robert Noyce Teacher Scholarship Program—

"(1) $70,000,000 for fiscal year 2008, of which at least $10,500,000 shall be used for capacity building activities described in subsection (a)(3)(A)(ii) and (iii) and (B)(ii) and (iii);

"(2) $101,000,000 for fiscal year 2009, of which at least $15,000,000 shall be used for capacity building activities described in subsection (a)(3)(A)(ii) and (iii) and (B)(ii) and (iii);

"(3) $133,000,000 for fiscal year 2010, of which at least $20,000,000 shall be used for capacity building activities described in subsection (a)(3)(A)(ii) and (iii) and (B)(ii) and (iii);

"(4) $164,000,000 for fiscal year 2011, of which at least $25,000,000 shall be used for capacity building activities described in subsection (a)(3)(A)(ii) and (iii) and (B)(ii) and (iii); and

"(5) $196,000,000 for fiscal year 2012, of which at least $29,000,000 shall be used for capacity building activities described in subsection (a)(3)(A)(ii) and (iii) and (B)(ii) and (iii).

"(m) EXCEPTION.—For any fiscal year for which the funding allocated for activities under this section is less than $70,000,000, the amount of funding available for capacity building activities described in paragraphs (1)

through (5) of subsection (l) shall not exceed 15 percent of the allocated funds.''.

(b) CONFORMING AMENDMENT.—Section 8(6) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in the paragraph heading by inserting ''TEACHER'' after ''NOYCE''; and

(2) by inserting ''Teacher'' after ''Noyce''.

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

SEC. 201. MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS AMENDMENTS.

Section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n) is amended—

(1) in subsection (a)(2)—

(A) by striking ''(A)'';

(B) by striking subparagraph (B);

(C) by inserting '', through 1 or more of its departments in science, mathematics, or engineering,'' after ''institution of higher education''; and

(D) by striking ''a State educational agency'' and inserting ''education faculty from the

participating institution or institutions of higher education, a State educational agency,'';

(2) in subsection (a)(3)(B)—

(A) by inserting ''content-specific'' before ''professional development programs'';

(B) by inserting ''which are'' before ''designed''; and

(C) by inserting ''and which may include teacher training activities to prepare mathematics and science teachers to teach Advanced Placement and International Baccalaureate mathematics and science courses'' after ''and science teachers'';

(3) in subsection (a)(3)(C)—

(A) by inserting ''and laboratory experiences'' after ''technology''; and

(B) by inserting ''and laboratory'' after ''provide technical'';

(4) in subsection (a)(3)(I) by inserting ''including model induction programs for teachers in their first 2 years of teaching,'' after ''and science,'';

(5) in subsection (a)(3)(K) by striking ''developing and offering mathematics or science enrichment programs for students, including after-school and summer programs;'' and inserting ''developing

1 educational programs and materials for use in and
2 conducting mathematics or science enrichment pro-
3 grams for students, including after-school programs
4 and summer camps for students described in sub-
5 section (b)(2)(G);";
6 (6) in subsection (a) by inserting at the end the
7 following:
8 "(8) MASTER'S DEGREE PROGRAMS.—Activities
9 carried out in accordance with paragraph (3)(B)
10 shall include the development and offering of mas-
11 ter's degree programs for in-service mathematics
12 and science teachers that will strengthen their sub-
13 ject area knowledge and pedagogical skills, as de-
14 scribed in section 203 of the Act enacting this para-
15 graph. Grants provided under this section may be
16 used to develop and implement courses of instruction
17 for the master's degree programs, which may involve
18 online learning, and develop related educational ma-
19 terials.
20 "(9) MENTORS FOR ADVANCED PLACEMENT
21 COURSES TEACHERS AND STUDENTS.—Partnerships
22 carrying out activities to prepare mathematics and
23 science teachers to teach Advanced Placement and
24 International Baccalaureate mathematics and
25 science courses in accordance with paragraph (3)(B)

shall encourage companies employing scientists, mathematicians, or engineers to provide mentors to teachers and students and provide for the coordination of such mentoring activities.

"(10) INVENTIVENESS.—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.";

(7) in subsection (b)(2) by redesignating subparagraphs (E) and (F) as subparagraphs (F) and (G), respectively, and inserting after subparagraph (D) the following new subparagraph:

"(E) the extent to which the evaluation described in paragraph (1)(E) will be independent and based on objective measures;";

(8) in subsection (b)(3)(A) by striking "and" at the end;

(9) in subsection (b)(3) by redesignating subparagraph (B) as subparagraph (C) and inserting after subparagraph (A) the following new subparagraph:

"(B) give priority to applications that include teacher training activities as the main focus of the proposal; and";

(10) in subsection (b) by inserting at the end the following:

"(4) MINIMUM AND MAXIMUM GRANT SIZE.—A grant awarded under this section shall be not less than $75,000 or greater than $2,000,000 for any fiscal year.";

(11) in subsection (c)—

(A) by striking paragraph (2);

(B) by redesignating paragraphs (3), (4), and (5) as paragraphs (4), (5), and (6), respectively; and

(C) by inserting after paragraph (1) the following new paragraphs:

"(2) REPORT ON MODEL PROJECTS.—The Director shall determine which completed projects funded through the program under this section should be seen as models to be replicated on a more expansive basis at the State or national levels. Not later than 1 year after the date of enactment of this paragraph, the Director shall transmit a report describing the results of this study to the Committee on Science and the Committee on Education and the Workforce of the House of Representatives and to the Committee on Commerce, Science, and Trans-

portation and the Committee on Health, Education, Labor, and Pensions of the Senate.

"(3) REPORT ON EVALUATIONS.—Not later than 4 years after the date of enactment of this paragraph, 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 the Committee on Education and the Workforce 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.".

SEC. 202. TEACHER INSTITUTES.

(a) NATIONAL SCIENCE FOUNDATION INSTITUTES.—

(1) IN GENERAL.—The Director shall establish a grant program to provide for summer or academic year teacher institutes or workshops authorized by section 9(a)(3)(B) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(3)(B)) and shall allow grantees under the Teacher Institutes for the 21st Century program to operate 1 to 2 week summer teacher institutes with

1 the goal of reaching the maximum number of in-
2 service mathematics and science teachers, particu-
3 larly elementary and middle school teachers, to im-
4 prove their content knowledge and pedagogical skills.
5 (2) ADVANCED PLACEMENT TRAINING.—The
6 Director shall ensure that activities supported for
7 awards under paragraph (1) include the development
8 and implementation of teacher training activities to
9 prepare mathematics and science teachers to teach
10 Advanced Placement and International Bacca-
11 laureate mathematics and science courses.
12 (3) AUTHORIZATION OF APPROPRIATIONS.—
13 There are authorized to be appropriated to the Na-
14 tional Science Foundation for the purposes of this
15 section, $32,000,000 for fiscal year 2008,
16 $35,200,000 for fiscal year 2009, $38,700,000 for
17 fiscal year 2010, $42,600,000 for fiscal year 2011,
18 and $46,800,000 for fiscal year 2012.
19 (b) LABORATORY SCIENCE TEACHER PROFESSIONAL
20 DEVELOPMENT.—There are authorized to be appropriated
21 to the Secretary of Energy for the Laboratory Science
22 Teacher Professional Development program, $3,000,000
23 for fiscal year 2008, $8,000,000 for fiscal year 2009,
24 $10,000,000 for fiscal year 2010, $10,000,000 for fiscal
25 year 2011, and $10,000,000 for fiscal year 2012.

SEC. 203. GRADUATE DEGREE PROGRAM.

(a) IN GENERAL.—The Director shall ensure that master's degree programs for in-service mathematics and science teachers that will strengthen their subject area knowledge and pedagogical skills are instituted in accordance with section 9(a)(8) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n(a)(8)). The degree programs shall be designed for current teachers, who will enroll as part-time students, and to allow participants to obtain master's degrees within a period of 2 years.

(b) DISTRIBUTION OF AWARDS.—The Director shall, in awarding grants to carry out subsection (a), consider the distribution of awards among institutions of higher education of different sizes and geographic locations.

(c) PROGRAM ACTIVITIES.—Activities supported through master's degree programs established under subsection (a) may include—

(1) development of courses of instruction and related educational materials;

(2) stipends to defray the cost of attendance for students in the degree program; and

(3) acquisition of computer and networking equipment needed for online instruction under the degree program.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section $46,000,000 for fiscal year 2008, $50,600,000 for fiscal year 2009, $55,700,000 for fiscal year 2010, $61,200,000 for fiscal year 2011, and $67,300,000 for fiscal year 2012.

SEC. 204. CURRICULAR MATERIALS.

The Director, in consultation with the Secretary of Education, shall convene a national panel of experts on mathematics and science education to identify and collect K–12 mathematics and science teaching materials that have been demonstrated to be effective and to recommend the development of new materials in areas where effective materials do not exist. The Director and Secretary shall develop ways to disseminate effective materials and support efforts to develop new materials, in accordance with the recommendations of the national panel.

SEC. 205. SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS TALENT EXPANSION PROGRAM.

(a) AMENDMENTS.—Section 8(7) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in subparagraph (A) by striking ''competitive, merit-based'' and all that follows through ''in

1 recent years'' and inserting ''competitive, merit-re-
2 viewed multiyear grants for eligible applicants to im-
3 prove undergraduate education in science, mathe-
4 matics, engineering, and technology through—
5 ''(i) the creation of programs to increase
6 the number of students studying toward and
7 completing associate's or bachelor's degrees in
8 science, technology, engineering, and mathe-
9 matics, particularly in fields that have faced de-
10 clining enrollment in recent years; and
11 ''(ii) the creation of centers (in this para-
12 graph referred to as 'Centers') to develop un-
13 dergraduate curriculum, teaching methods for
14 undergraduate courses, and methods to better
15 train professors and teaching assistants who
16 teach undergraduate courses to increase the
17 number of students completing undergraduate
18 courses in science, technology, engineering, and
19 mathematics, including the number of non-
20 majors, and to improve student academic
21 achievement in those courses.
22 Grants made under clause (ii) shall be awarded
23 jointly through the Education and Human Re-
24 sources Directorate and at least 1 research direc-
25 torate of the Foundation.'';

(2) in subparagraph (B) by striking "under this paragraph" and inserting "under subparagraph (A)(i)";

(3) in subparagraph (C)—

(A) by inserting "(i)" before "The types of";

(B) by redesignating clauses (i) through (vi) as subclauses (I) through (VI), respectively;

(C) by striking "under this paragraph" and inserting "under subparagraph (A)(i)"; and

(D) by adding at the end the following new clause:

"(i) The types of activities the Foundation may support under subparagraph (A)(ii) include—

"(I) creating model curricula and laboratory programs;

"(II) developing and demonstrating research-based instructional methods and technologies;

"(III) developing methods to train graduate students and faculty to be more effective teachers of undergraduates;

"(IV) conducting programs to disseminate curricula, instructional methods, or training

methods to faculty at the grantee institutions and at other institutions;

"(V) conducting assessments of the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii); and

"(VI) conducting any other activities the Director determines will accomplish the goals described in subparagraph (A)(ii).";

(4) in subparagraph (D)(i), by striking "under this paragraph" and inserting "under subparagraph (A)(i)";

(5) in subparagraph (D)(ii), by striking "under this paragraph" and inserting "under subparagraph (A)(i)";

(6) after subparagraph (D)(iii), by adding at the end the following new clause:

"(iv) A grant under subparagraph (A)(ii) shall be awarded for 5 years, and the Director may extend such a grant for up to 2 additional 3 year periods.";

(7) in subparagraph (E), by striking "under this paragraph" both places it appears and inserting "under subparagraph (A)(i)";

(8) by redesignating subparagraph (F) as subparagraph (J); and

(9) by inserting after subparagraph (E) the following new subparagraphs:

"(F) Grants awarded under subparagraph (A)(ii) shall be carried out by a department or departments of science, mathematics, or engineering at institutions of higher education (or a consortia thereof), which may partner with education faculty. Applications for awards under subparagraph (A)(ii) shall be submitted to the Director at such time, in such manner, and containing such information as the Director may require. At a minimum, the application shall include—

"(i) a description of the activities to be carried out by the Center;

"(ii) a plan for disseminating programs related to the activities carried out by the Center to faculty at the grantee institution and at other institutions;

"(iii) an estimate of the number of faculty, graduate students (if any), and undergraduate students who will be affected by the activities carried out by the Center; and

"(iv) a plan for assessing the effectiveness of the Center at accomplishing the goals described in subparagraph (A)(ii).

"(G) In evaluating the applications submitted under subparagraph (F), the Director shall consider, at a minimum—

"(i) the ability of the applicant to effectively carry out the proposed activities, including the dissemination activities described in subparagraph (C)(ii)(IV); and

"(ii) the extent to which the faculty, staff, and administrators of the applicant institution are committed to improving undergraduate science, mathematics, and engineering education.

"(H) In awarding grants under subparagraph (A)(ii), the Director shall endeavor to ensure that a wide variety of science, technology, engineering, and mathematics fields and types of institutions of higher education, including 2-year colleges, are covered, and that—

"(i) at least 1 Center is housed at a Doctoral/Research University as defined by the Carnegie Foundation for the Advancement of Teaching; and

"(ii) at least 1 Center is focused on improving undergraduate education in an interdisciplinary area.

"(I) The Director shall convene an annual meeting of the awardees under this paragraph to foster collaboration and to disseminate the results of the Centers and the other activities funded under this paragraph.".

(b) REPORT ON DATA COLLECTION.—Not later than 180 days after the date of enactment of this Act, the Director shall transmit to Congress a report on how the Director is determining whether current grant recipients in the Science, Technology, Engineering, and Mathematics Talent Expansion Program are making satisfactory progress as required by section 8(7)(D)(ii) of the National Science Foundation Authorization Act of 2002 and what funding actions have been taken as a result of the Director's determinations.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the program described in paragraph (7) of section 8 of the National Science Foundation Authorization Act of 2002—

(1) $44,000,000 for fiscal year 2008, of which $4,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(2) $55,000,000 for fiscal year 2009, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(3) $60,000,000 for fiscal year 2010, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

(4) $60,000,000 for fiscal year 2011, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph; and

(5) $60,000,000 for fiscal year 2012, of which $10,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph.

○

SECTION-BY-SECTION ANALYSIS OF

H.R. 362, "10,000 TEACHERS, 10 MILLION MINDS" SCIENCE AND MATH SCHOLARSHIP ACT

Summary

The bill implements most of the K–12 science education recommendations of the National Academies report, *"Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future."* It establishes a teacher education program at the National Science Foundation (NSF) to encourage math, science, and engineering faculty to work with education faculty to improve the education of mathematics and science teachers and to provide scholarships to students in science, technology, engineering, and mathematics (STEM) fields who commit to become mathematics and science teachers at elementary and secondary schools; authorizes summer teacher training institutes at NSF and DOE to improve the content knowledge and pedagogical skills of in-service mathematics and science teachers, including preparing them to teach challenging course in science and math such as the Advanced Placement and International Baccalaureate courses; requires that NSF include support for Master's degree programs for in-service mathematics and science teachers within the NSF Math and Science Partnerships; and authorizes funding for the NSF STEM Talent Expansion program and expands the program to include centers for improving undergraduate STEM education.

Sectional Summary of Bill

Section 1 Table of contents.

Section 2 Findings on the role of NSF in K–12 and undergraduate STEM education.

Section 3 Definitions used in the bill.

Title I—Science Scholarships

Section 101 Short title of the bill.

Section 102 Findings relating the bill to the National Academies report recommendations.

Section 103 Policy objective of the bill—to increase by 10,000 annually the number of capable K–12 science and math teachers.

Section 104 Amends the NSF Noyce Scholarship program, established by the NSF Authorization Act of 2002, to create incentives for colleges and universities to improve the training of STEM teachers and increases the size and duration of the scholarships provided for majors in STEM fields who pursue teaching credentials:

- Provides competitive awards to institutions of higher education (or consortia of such institutions) that (1) establish cross-department faculty teams (STEM faculty along with education faculty) to develop courses of instruction leading to baccalaureate degrees in STEM fields and also preparing graduates to become certified or licensed to teach in a K–12 classroom, and (2) administer scholarships for students during their sophomore through senior years and summer internships during their freshman years.
- Requires early field teaching experiences for student teachers in the program under the supervision of highly experienced and effective teachers.
- Requires awardees to provide professional development and mentoring support to scholarship recipients, after matriculation.
- Sets scholarship amounts at the cost of attendance at particular institutions, not to exceed $10,000 per year, and provides up to three years of scholarship support for any individual.
- Requires scholarship recipients to commit to teaching for up to six years following graduation (the period of teaching commitment is based on the number of years of scholarship support), reduces the commitment by one year for individuals who teach at high-need schools, and converts the scholarships to loans if the teaching commitment is not met.
- Authorizes the NSF to accept donations from the private sector to help support scholarships and internships.

- Authorizes $70 million for NSF for FY 2008, $101 million for FY 2009, $133 million for FY 2010, $164 million for FY 2011, and $196 million for FY 2012.

Title II—Mathematics and Science Education Improvement

Section 201 amends the NSF Math and Science Education Partnerships program established by the NSF Authorization Act of 2002:

- Authorizes the development of Master's degree programs for in-service mathematics and science teachers.
- Authorizes teacher training activities to prepare teachers to teach challenging courses in mathematics and science, including Advanced Placement and International Baccalaureate courses, and provides for mentoring by professional scientists, mathematicians, and engineers.

Section 202 addresses teacher institute programs at NSF and DOE:

- Directs NSF to establish a grant program to support summer or academic year teacher institutes and authorizes summer teacher institutes as a component of the NSF 21st Century program. Such summer institutes are required to include teacher training activities to prepare teachers to teach challenging courses in mathematics and science, including Advanced Placement and International Baccalaureate courses.
- Authorizes $32 million for NSF for FY 2008, $35.2 million for FY 2009, and $38.7 million for FY 2010, $42.6 million for FY 2011, and $46.8 million for FY 2012.
- The following amounts are authorized for the existing Laboratory Science Teacher Professional Development program at DOE: $3 million for FY 2008, $8 million for FY 2009, and $10 million for each year FY 2010 through FY 2012.

Section 203 requires NSF, under the Math and Science Partnership program, to develop and implement Master's degree programs for in-service mathematics and science teachers, who attend on a part-time basis and who will be able to complete the degree requirements within three years. The programs have the following features:

- Provide stipends to defray the cost of attendance for teachers in the program.
- Allow for support for the development of the courses of instruction and related educational materials and equipment (offering of online learning is an option).
- Require the distribution of awards among institutions of different sizes and geographic locations.

Authorizes $46 million for NSF for FY 2008, $50.6 million for FY 2009, $55.7 million for FY 2010, $61.2 million for FY 2011, and $67.3 million for FY 2012.

Section 204: (1) Establishes a national panel of experts to identify and collect K–12 mathematics and science teaching materials that have been demonstrated to be effective and to recommend the development of new materials in areas where effective materials do not exist; and (2) directs NSF and the Department of Education to develop ways to disseminate effective materials and support efforts to develop new materials, in accordance with the recommendations of the national panel.

Section 205 amends the NSF STEM Talent Expansion Program established under the NSF Authorization Act of 2002 to create centers for improvement of undergraduate education in STEM fields, including:

- Centers for the development of undergraduate curriculum and teaching methods and for training faculty and teaching assistants in effective pedagogical practices.
- Assessment of the effectiveness of the centers and dissemination of information about materials and methods developed.

Authorizes $44 million for NSF for the STEM Talent Expansion program for FY 2008, of which $4 million is available for centers; $55 million for FY 2009, of which $10 million is available for centers; and $60 million for each year of FY 2010 through FY 2012, of which $10 million is available in each year for centers.

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
MARCH 28, 2007

AMENDMENT ROSTER

H.R. 362, "10,000 Teachers, 10 Million Minds" Science and Math Scholarship Act

No.	Sponsor	Description	Results
1.	Mr. Gordon w/ Mr. Hall	Amendment in the Nature of a Substitute to H.R. 362	Passed by voice vote.
2.	Ms. E.B. Johnson w/ Mr. Ehlers	Amendment to add a new section to the bill to establish an NSF grant program to support science lab improvement in secondary schools.	Passed by voice vote.
3.	Ms. E.B. Johnson	Amendment to Section 205 – adds "including minority-serving institutions" to types of institutions for STEP programs.	Passed by voice vote.
4.	Ms. Giffords	Amendment to Section 205 – specifying that NSF should attempt to increase the number of students from schools with concentrations of children from low income families who are STEM graduates.	Passed by voice vote.
5.	Ms. Giffords	Amendment to Section 202 – requires NSF to give priority to summer teacher institute grant applications that propose programs that will attract teachers from high-need schools systems.	Passed by voice vote.
6.	Mr. Akin	Amends Section 204 – adding "Recommendations made under this section shall not be considered a mandate of specific K-12 curricula" after "the national panel."	Passed by voice vote.

AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362 OFFERED BY MR. GORDON OF TENNESSEE AND MR. HALL OF TEXAS

Strike all after the enacting clause and insert the following:

1 **SECTION 1. TABLE OF CONTENTS.**

2 The table of contents for this Act is as follows:

Sec. 1. Table of contents.
Sec. 2. Findings.
Sec. 3. Definitions.

TITLE I—SCIENCE SCHOLARSHIPS

Sec. 101. Short title.
Sec. 102. Findings.
Sec. 103. Policy objective.
Sec. 104. Robert Noyce Teacher Scholarship Program.

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

Sec. 201. Mathematics and science education partnerships amendments.
Sec. 202. Teacher institutes.
Sec. 203. Graduate degree program.
Sec. 204. Curricular materials.
Sec. 205. Science, Technology, Engineering, and Mathematics Talent Expansion Program.
Sec. 206. High-need local educational agency definition.
Sec. 207. Teacher leaders.

3 **SEC. 2. FINDINGS.**

4 Congress finds the following:

5 (1) The National Science Foundation has made
6 significant and valuable contributions to the im-
7 provement of K–12 and undergraduate science, tech-

nology, engineering, and mathematics education throughout its 56 year history.

(2) Under section 3 of the National Science Foundation Act of 1950 (42 U.S.C. 1862), the National Science Foundation is explicitly required to strengthen science, mathematics, and engineering research potential and education programs at all levels.

SEC. 3. DEFINITIONS.

In this Act:

(1) The term ''cost of attendance'' has the meaning given that term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll).

(2) The term ''Director'' means the Director of the National Science Foundation.

(3) The term ''institution of higher education'' has the meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) The term ''mathematics and science teacher'' means a mathematics, science, or technology teacher at the elementary school or secondary school level.

TITLE I—SCIENCE SCHOLARSHIPS

SEC. 101. SHORT TITLE.

This title may be cited as the "10,000 Teachers, 10 Million Minds Science and Math Scholarship Act".

SEC. 102. FINDINGS.

Congress finds the following:

(1) The prosperity the United States enjoys today is due in no small part to investments the Nation has made in research and development over the past 50 years.

(2) Corporate, government, and national scientific and technical leaders have raised concerns that current trends affecting the science and technology enterprise of the Nation could result in erosion of this past success and jeopardize future prosperity.

(3) The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine were tasked in a congressional request to recommend actions that the Federal Government could take to enhance the science and technology enterprise so that the United States can successfully compete, prosper, and be secure in the global community of the 21st century.

(4) The Academies' highest priority recommendation in its report, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future", is to improve K–12 mathematics and science education, and the Academies' first recommended action item is to institute a major scholarship program to recruit and educate annually 10,000 mathematics and science teachers.

SEC. 103. POLICY OBJECTIVE.

In carrying out the program under section 104, the National Science Foundation shall seek to increase by up to 10,000 per year the number of elementary and secondary mathematics and science teachers in the Nation's schools having both exemplary subject knowledge and pedagogical skills.

SEC. 104. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.

(a) PROGRAM AMENDMENTS.—Section 10 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1) is amended—

(1) by inserting "**TEACHER**" after "**NOYCE**" in the section heading;

(2) in subsection (a)(1)—

(A) by striking "to provide scholarships, stipends, and programming designed";

(B) by inserting ''and to provide scholarships and stipends to students participating in the program'' after ''science teachers''; and

(C) by inserting ''Teacher'' after ''Noyce'';

(3) in subsection (a)(3)(A)—

(A) by striking ''encourage top college juniors and seniors'' and inserting ''recruit and prepare undergraduate students''; and

(B) by inserting ''qualified as'' after ''to become'';

(4) in subsection (a)(3)(A)(ii)—

(A) by striking ''programs to help scholarship recipients'' and inserting ''academic courses and early field teaching experiences designed to prepare students participating in the program'';

(B) by striking ''programs that will result in'' and inserting ''such preparation as is necessary to meet requirements for''; and

(C) by striking ''licensing; and'' and inserting ''licensing;'';

(5) in subsection (a)(3)(A)(iii)—

(A) by striking ''scholarship recipients'' and inserting ''students participating in the program'';

(B) by striking "enable the recipients" and inserting "enable the students"; and

(C) by striking "; or" and inserting "; and";

(6) in subsection (a)(3)(A) by inserting at the end the following new clause:

"(iv) providing summer internships for freshman students participating in the program; or";

(7) in subsection (a)(3)(B)—

(A) by striking "encourage" and inserting "recruit and prepare"; and

(B) by inserting "qualified as" after "to become";

(8) by amending clause (ii) of subsection (a)(3)(B) to read as follows:

"(ii) offering academic courses and field teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing;";

(9) in subsection (a) by inserting at the end the following new paragraph:

"(4) ELIGIBILITY REQUIREMENT.—To be eligible for an award under this section, an institution of higher education (or consortia of such institutions) shall ensure that specific faculty members and staff from the institution's mathematics, science, or engineering departments and specific education faculty are designated to carry out the development and implementation of the program. An institution of higher education may also include teacher leaders to participate in developing the pedagogical content of the program and to supervise students participating in the program in their field teaching experiences. No institution of higher education shall be eligible for an award unless faculty from the institution's mathematics, science, or engineering departments are active participants in the program.";

(10) in subsection (b)(1)(A)—

(A) by striking "scholarship or stipend";

(B) by inserting "and summer internships" after "number of scholarships"; and

(C) by inserting "the type of activities proposed for the recruitment of students to the program," after "intends to award,";

(11) in subsection (b)(1)(B)—

1 (A) by striking ''scholarship or stipend'';
2 and
3 (B) by striking ''; and'' and inserting '',
4 which may include a description of any existing
5 programs at the applicant's institution that are
6 targeted to the education of mathematics and
7 science teachers and the number of teachers
8 graduated annually from such programs;'';
9 (12) in subsection (b)(1), by striking subpara-
10 graph (C) and inserting the following:
11 ''(C) a description of the academic courses
12 and field teaching experiences required under
13 subsection (a)(3)(A)(ii) and (B)(ii), including—
14 ''(i) a description of the under-
15 graduate program that will enable a stu-
16 dent to graduate within 5 years with a
17 major in mathematics, science, or engineer-
18 ing and to obtain teacher certification or li-
19 censing;
20 ''(ii) a description of the field teaching
21 experiences proposed; and
22 ''(iii) evidence of agreements between
23 the applicant and the schools or school dis-
24 tricts that are identified as the locations at
25 which field teaching experiences will occur;

"(D) a description of the programs required under subsection (a)(3)(A)(iii) and (B)(iii), including activities to assist new teachers in fulfilling their service requirements under this section; and

"(E) an identification of the applicant's mathematics, science, or engineering faculty and its education faculty who will carry out the development and implementation of the program as required under subsection (a)(4).";

(13) in subsection (b)(2)—

(A) by redesignating subparagraphs (B), (C), (D), and (E) as subparagraphs (C), (D), (E) and (F), respectively;

(B) by inserting after subparagraph (A) a new subparagraph as follows:

"(B) the extent to which the applicant's mathematics, science, or engineering faculty and its education faculty have worked or will work collaboratively to design new or revised curricula that recognizes the specialized pedagogy required to teach mathematics, science, and technology effectively in elementary and secondary schools;"; and

1 (C) by amending subparagraph (F), as so
2 redesignated by subparagraph (A) of this para-
3 graph, to read as follows:
4 "(F) the ability of the applicant to recruit
5 students who are individuals identified in sec-
6 tion 33 or 34 of the Science and Engineering
7 Equal Opportunities Act (42 U.S.C. 1885a or
8 1885b).";
9 (14) in subsection (c)(1)(B), by striking "2
10 years" and inserting "3 years";
11 (15) in subsection (c)(3)—
12 (A) by striking "$7,500" and inserting
13 "$10,000"; and
14 (B) by striking "2 years of scholarship
15 support" and inserting "3 years of scholarship
16 support, unless the Director establishes a policy
17 by which part-time students may receive addi-
18 tional years of support";
19 (16) in subsection (c)(4)—
20 (A) by striking "6 years" and inserting "8
21 years";
22 (B) by inserting ", with a maximum serv-
23 ice requirement of 6 years" after "was re-
24 ceived"; and

1 (C) by striking "Service required under
2 this paragraph shall be performed in a high-
3 need local educational agency.";
4 (17) in subsection (c), by adding at the end a
5 new paragraph as follows:
6 "(5) EXCEPTION.—The period of service obliga-
7 tion under paragraph (4) is reduced by 1 year for
8 scholarship recipients whose service is performed in
9 a high-need local educational agency.";
10 (18) in subsection (d)(1), by striking "to re-
11 ceive certification or licensing to teach" and insert-
12 ing "established under subsection (a)(3)(B)";
13 (19) in subsection (d)(2), by inserting "and
14 professional achievement" after "academic merit";
15 (20) in subsection (d)(3), by striking "1 year"
16 and inserting "16 months";
17 (21) in subsection (d)(4)—
18 (A) by striking "6 years" and inserting "4
19 years"; and
20 (B) by striking "for each year a stipend
21 was received";
22 (22) in subsection (g)(2)(A)—
23 (A) by striking "Treasurer of the United
24 States," and inserting "Treasurer of the United
25 States."; and

(B) by striking "multiplied by 2."

(23) in subsection (i)(3), by inserting "or had a career in" after "is working in";

(24) in subsection (i)—

(A) by striking "and" at the end of paragraph (4);

(B) by striking the period at the end of paragraph (5) and inserting "; and"; and

(C) by adding at the end the following:

"(6) the term 'teacher leader' 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, for the purposes of training other teacher leaders, to mathematics and science teachers."; and

(25) by adding at the end the following:

"(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950, the Director is authorized to accept donations from the private sector to support scholarships, stipends, or internships associated with programs under this section.

"(k) ASSESSMENT OF TEACHER SERVICE AND RETENTION.—Not later than 4 years after the date of enactment of this subsection, the Director shall transmit to Congress a report on the effectiveness of the program carried out under this section. The report shall include the proportion of individuals receiving scholarships or stipends under the program who —

"(1) fulfill their service obligation required under this section in a high-need local educational agency;

1 "(2) elect to fulfill their service obligation in a
2 high-need local educational agency but fail to com-
3 plete it, as defined in subsection (g);
4 "(3) remain in the teaching profession beyond
5 their service obligation; and
6 "(4) remain in the teaching profession in a
7 high-need local educational agency beyond their serv-
8 ice obligation.
9 "(l) AUTHORIZATION OF APPROPRIATIONS.—There
10 are authorized to be appropriated to the Director for the
11 Robert Noyce Teacher Scholarship Program—
12 "(1) $70,000,000 for fiscal year 2008;
13 "(2) $101,000,000 for fiscal year 2009;
14 "(3) $133,000,000 for fiscal year 2010;
15 "(4) $164,000,000 for fiscal year 2011; and
16 "(5) $196,000,000 for fiscal year 2012.".
17 (b) CONFORMING AMENDMENT.—Section 8(6) of the
18 National Science Foundation Authorization Act of 2002
19 is amended—
20 (1) in the paragraph heading by inserting
21 "TEACHER" after "NOYCE"; and
22 (2) by inserting "Teacher" after "Noyce".

TITLE II—MATHEMATICS AND SCIENCE EDUCATION IMPROVEMENT

SEC. 201. MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS AMENDMENTS.

Section 9 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n) is amended—

(1) in subsection (a)(2)—

(A) by striking "(A)";

(B) by striking subparagraph (B);

(C) by inserting ", through 1 or more of its departments in science, mathematics, or engineering," after "institution of higher education"; and

(D) by striking "a State educational agency" and inserting "education faculty from the participating institution or institutions of higher education, a State educational agency,";

(2) in subsection (a)(3)(B)—

(A) by inserting "content-specific" before "professional development programs";

(B) by inserting "which are" before "designed"; and

(C) by inserting "and which may include teacher training activities to prepare mathe-

1 matics and science teachers to teach challenging
2 mathematics, science, and technology college-
3 preparatory courses, including Advanced Place-
4 ment and International Baccalaureate courses''
5 after ''and science teachers'';
6 (3) in subsection (a)(3)(C)—
7 (A) by inserting ''and laboratory experi-
8 ences'' after ''technology''; and
9 (B) by inserting ''and laboratory'' after
10 ''provide technical'';
11 (4) in subsection (a)(3)(I) by inserting ''includ-
12 ing model induction programs for teachers in their
13 first 2 years of teaching,'' after ''and science,'';
14 (5) in subsection (a)(3)(K) by striking ''devel-
15 oping and offering mathematics or science enrich-
16 ment programs for students, including after-school
17 and summer programs;'' and inserting ''developing
18 educational programs and materials and conducting
19 mathematics, science, and technology enrichment
20 programs for students, including after-school pro-
21 grams and summer camps for students described in
22 subsection (b)(2)(G);'';
23 (6) in subsection (a) by inserting at the end the
24 following:

1 "(8) MASTER'S DEGREE PROGRAMS.—Activities
2 carried out in accordance with paragraph (3)(B)
3 shall include the development and offering of mas-
4 ter's degree programs for in-service mathematics
5 and science teachers that will strengthen their sub-
6 ject area knowledge and pedagogical skills, as de-
7 scribed in section 203 of the Act enacting this para-
8 graph. Grants provided under this section may be
9 used to develop and implement courses of instruction
10 for the master's degree programs, which may involve
11 online learning, and develop related educational ma-
12 terials.
13 "(9) MENTORS FOR TEACHERS AND STUDENTS
14 OF CHALLENGING COURSES.—Partnerships carrying
15 out activities to prepare mathematics and science
16 teachers to teach challenging mathematics, science,
17 and technology college-preparatory courses, includ-
18 ing Advanced Placement and International Bacca-
19 laureate courses, in accordance with paragraph
20 (3)(B) shall encourage companies employing sci-
21 entists, mathematicians, or engineers to provide
22 mentors to teachers and students and provide for
23 the coordination of such mentoring activities.
24 "(10) INVENTIVENESS.—Activities carried out
25 in accordance with paragraph (3)(H) may include

1 the development and dissemination of curriculum
2 tools that will help foster inventiveness and innova-
3 tion.";
4 (7) in subsection (b)(2) by redesignating sub-
5 paragraphs (E) and (F) as subparagraphs (F) and
6 (G), respectively, and inserting after subparagraph
7 (D) the following new subparagraph:
8 "(E) the extent to which the evaluation de-
9 scribed in paragraph (1)(E) will be independent
10 and based on objective measures;";
11 (8) in subsection (b) by inserting at the end the
12 following:
13 "(4) MINIMUM AND MAXIMUM GRANT SIZE.—A
14 grant awarded under this section shall be not less
15 than $75,000 or greater than $2,000,000 for any
16 fiscal year.";
17 (9) in subsection (c)—
18 (A) by striking paragraph (2);
19 (B) by redesignating paragraphs (3), (4),
20 and (5) as paragraphs (4), (5), and (6), respec-
21 tively; and
22 (C) by inserting after paragraph (1) the
23 following new paragraphs:
24 "(2) REPORT ON MODEL PROJECTS.—The Di-
25 rector shall determine which completed projects

1 funded through the program under this section
2 should be seen as models to be replicated on a more
3 expansive basis at the State or national levels. Not
4 later than 1 year after the date of enactment of this
5 paragraph, the Director shall transmit a report de-
6 scribing the results of this study to the Committee
7 on Science and Technology and the Committee on
8 Education and Labor of the House of Representa-
9 tives and to the Committee on Commerce, Science,
10 and Transportation and the Committee on Health,
11 Education, Labor, and Pensions of the Senate.
12 "(3) REPORT ON EVALUATIONS.—Not later
13 than 4 years after the date of enactment of this
14 paragraph, the Director shall transmit a report sum-
15 marizing the evaluations required under subsection
16 (b)(1)(E) of grants received under this program and
17 describing any changes to the program recommended
18 as a result of these evaluations to the Committee on
19 Science and Technology and the Committee on Edu-
20 cation and Labor of the House of Representatives
21 and to the Committee on Commerce, Science, and
22 Transportation and the Committee on Health, Edu-
23 cation, Labor, and Pensions of the Senate. Such re-
24 port shall be made widely available to the public.";
25 and

1 (10) by adding at the end the following new
2 subsection:
3 "(d) DEFINITIONS.—In this section—
4 "(1) the term 'mathematics and science teacher'
5 means a mathematics, science, or technology teacher
6 at the elementary school or secondary school level;
7 and
8 "(2) the term 'science', in the context of ele-
9 mentary and secondary education, includes tech-
10 nology and pre-engineering.".
11 **SEC. 202. TEACHER INSTITUTES.**
12 (a) NATIONAL SCIENCE FOUNDATION INSTITUTES.—
13 (1) IN GENERAL.—The Director shall establish
14 a grant program to provide for summer or academic
15 year teacher institutes or workshops authorized by
16 section 9(a)(3)(B) of the National Science Founda-
17 tion Authorization Act of 2002 (42 U.S.C.
18 1862n(a)(3)(B)) and shall allow grantees under the
19 Teacher Institutes for the 21st Century program to
20 operate 1 to 2 week summer teacher institutes with
21 the goal of reaching the maximum number of in-
22 service mathematics and science teachers, particu-
23 larly elementary and middle school teachers, to im-
24 prove their content knowledge and pedagogical skills.

1 (2) PREPARATION TO TEACH CHALLENGING
2 COURSES.—The Director shall ensure that activities
3 supported for awards under paragraph (1) include
4 the development and implementation of teacher
5 training activities to prepare mathematics and
6 science teachers to teach challenging mathematics,
7 science, and technology college-preparatory courses,
8 including Advanced Placement and International
9 Baccalaureate courses.
10 (3) AUTHORIZATION OF APPROPRIATIONS.—
11 There are authorized to be appropriated to the Na-
12 tional Science Foundation for the purposes of this
13 section, $32,000,000 for fiscal year 2008,
14 $35,200,000 for fiscal year 2009, $38,700,000 for
15 fiscal year 2010, $42,600,000 for fiscal year 2011,
16 and $46,800,000 for fiscal year 2012.
17 (b) LABORATORY SCIENCE TEACHER PROFESSIONAL
18 DEVELOPMENT.—There are authorized to be appropriated
19 to the Secretary of Energy for the Laboratory Science
20 Teacher Professional Development program, $3,000,000
21 for fiscal year 2008, $8,000,000 for fiscal year 2009,
22 $10,000,000 for fiscal year 2010, $10,000,000 for fiscal
23 year 2011, and $10,000,000 for fiscal year 2012.

1 **SEC. 203. GRADUATE DEGREE PROGRAM.**

2 (a) IN GENERAL.—The Director shall ensure that
3 master's degree programs for in-service mathematics and
4 science teachers that will strengthen their subject area
5 knowledge and pedagogical skills are instituted in accord-
6 ance with section 9(a)(8) of the National Science Founda-
7 tion Authorization Act of 2002 (42 U.S.C. 1862n(a)(8)).
8 The degree programs shall be designed for current teach-
9 ers, who will enroll as part-time students, and to allow
10 participants to obtain master's degrees within a period of
11 3 years.

12 (b) DISTRIBUTION OF AWARDS.—The Director shall,
13 in awarding grants to carry out subsection (a), consider
14 the distribution of awards among institutions of higher
15 education of different sizes and geographic locations.

16 (c) PROGRAM ACTIVITIES.—Activities supported
17 through master's degree programs established under sub-
18 section (a) may include—

19 (1) development of courses of instruction and
20 related educational materials;

21 (2) stipends to defray the cost of attendance for
22 students in the degree program; and

23 (3) acquisition of computer and networking
24 equipment needed for online instruction under the
25 degree program.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the purposes of this section $46,000,000 for fiscal year 2008, $50,600,000 for fiscal year 2009, $55,700,000 for fiscal year 2010, $61,200,000 for fiscal year 2011, and $67,300,000 for fiscal year 2012.

SEC. 204. CURRICULAR MATERIALS.

The Director, in consultation with the Secretary of Education, shall convene a national panel of experts on mathematics and science education to identify and collect K–12 mathematics, science, and technology teaching materials that have been demonstrated to be effective and to recommend the development of new materials in areas where effective materials do not exist. The Director and Secretary shall develop ways to disseminate effective materials and support efforts to develop new materials, in accordance with the recommendations of the national panel.

SEC. 205. SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS TALENT EXPANSION PROGRAM.

(a) AMENDMENTS.—Section 8(7) of the National Science Foundation Authorization Act of 2002 is amended—

(1) in subparagraph (A) by striking ''competitive, merit-based'' and all that follows through ''in

1 recent years'' and inserting ''competitive, merit-re-
2 viewed multiyear grants for eligible applicants to im-
3 prove undergraduate education in science, mathe-
4 matics, engineering, and technology through—
5 ''(i) the creation of programs to increase
6 the number of students studying toward and
7 completing associate's or bachelor's degrees in
8 science, technology, engineering, and mathe-
9 matics, particularly in fields that have faced de-
10 clining enrollment in recent years; and
11 ''(ii) the creation of centers (in this para-
12 graph referred to as 'Centers') to develop un-
13 dergraduate curriculum, teaching methods for
14 undergraduate courses, and methods to better
15 train professors and teaching assistants who
16 teach undergraduate courses to increase the
17 number of students completing undergraduate
18 courses in science, technology, engineering, and
19 mathematics, including the number of non-
20 majors, and to improve student academic
21 achievement in those courses.
22 Grants made under clause (ii) shall be awarded
23 jointly through the Education and Human Re-
24 sources Directorate and at least 1 research direc-
25 torate of the Foundation.'';

1 (2) in subparagraph (B) by striking "under this
2 paragraph" and inserting "under subparagraph
3 (A)(i)";
4 (3) in subparagraph (C)—
5 (A) by inserting "(i)" before "The types
6 of";
7 (B) by redesignating clauses (i) through
8 (vi) as subclauses (I) through (VI), respectively;
9 (C) by striking "under this paragraph"
10 and inserting "under subparagraph (A)(i)"; and
11 (D) by adding at the end the following new
12 clause:
13 "(ii) The types of activities the Foundation may
14 support under subparagraph (A)(ii) include—
15 "(I) creating model curricula and labora-
16 tory programs;
17 "(II) developing and demonstrating re-
18 search-based instructional methods and tech-
19 nologies;
20 "(III) developing methods to train grad-
21 uate students and faculty to be more effective
22 teachers of undergraduates;
23 "(IV) conducting programs to disseminate
24 curricula, instructional methods, or training

1 methods to faculty at the grantee institutions
2 and at other institutions;
3 "(V) conducting assessments of the effec-
4 tiveness of the Center at accomplishing the
5 goals described in subparagraph (A)(ii); and
6 "(VI) conducting any other activities the
7 Director determines will accomplish the goals
8 described in subparagraph (A)(ii).";
9 (4) in subparagraph (D)(i), by striking "under
10 this paragraph" and inserting "under subparagraph
11 (A)(i)";
12 (5) in subparagraph (D)(ii), by striking "under
13 this paragraph" and inserting "under subparagraph
14 (A)(i)";
15 (6) after subparagraph (D)(iii), by adding at
16 the end the following new clause:
17 "(iv) A grant under subparagraph (A)(ii) shall
18 be awarded for 5 years, and the Director may extend
19 such a grant for up to 2 additional 3 year periods.";
20 (7) in subparagraph (E), by striking "under
21 this paragraph" both places it appears and inserting
22 "under subparagraph (A)(i)";
23 (8) by redesignating subparagraph (F) as sub-
24 paragraph (J); and

1 (9) by inserting after subparagraph (E) the fol-
2 lowing new subparagraphs:
3 "(F) Grants awarded under subparagraph
4 (A)(ii) shall be carried out by a department or de-
5 partments of science, mathematics, or engineering at
6 institutions of higher education (or a consortia
7 thereof), which may partner with education faculty.
8 Applications for awards under subparagraph (A)(ii)
9 shall be submitted to the Director at such time, in
10 such manner, and containing such information as
11 the Director may require. At a minimum, the appli-
12 cation shall include—
13 "(i) a description of the activities to be
14 carried out by the Center;
15 "(ii) a plan for disseminating programs re-
16 lated to the activities carried out by the Center
17 to faculty at the grantee institution and at
18 other institutions;
19 "(iii) an estimate of the number of faculty,
20 graduate students (if any), and undergraduate
21 students who will be affected by the activities
22 carried out by the Center; and
23 "(iv) a plan for assessing the effectiveness
24 of the Center at accomplishing the goals de-
25 scribed in subparagraph (A)(ii).

1 "(G) In evaluating the applications submitted
2 under subparagraph (F), the Director shall consider,
3 at a minimum—
4 "(i) the ability of the applicant to effec-
5 tively carry out the proposed activities, includ-
6 ing the dissemination activities described in
7 subparagraph (C)(ii)(IV); and
8 "(ii) the extent to which the faculty, staff,
9 and administrators of the applicant institution
10 are committed to improving undergraduate
11 science, mathematics, and engineering edu-
12 cation.
13 "(H) In awarding grants under subparagraph
14 (A)(ii), the Director shall endeavor to ensure that a
15 wide variety of science, technology, engineering, and
16 mathematics fields and types of institutions of high-
17 er education, including 2-year colleges, are covered,
18 and that—
19 "(i) at least 1 Center is housed at a Doc-
20 toral/Research University as defined by the
21 Carnegie Foundation for the Advancement of
22 Teaching; and
23 "(ii) at least 1 Center is focused on im-
24 proving undergraduate education in an inter-
25 disciplinary area.

"(I) The Director shall convene an annual meeting of the awardees under this paragraph to foster collaboration and to disseminate the results of the Centers and the other activities funded under this paragraph.".

(b) REPORT ON DATA COLLECTION.—Not later than 180 days after the date of enactment of this Act, the Director shall transmit to Congress a report on how the Director is determining whether current grant recipients in the Science, Technology, Engineering, and Mathematics Talent Expansion Program are making satisfactory progress as required by section 8(7)(D)(ii) of the National Science Foundation Authorization Act of 2002 and what funding actions have been taken as a result of the Director's determinations.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation for the program described in paragraph (7) of section 8 of the National Science Foundation Authorization Act of 2002—

(1) $44,000,000 for fiscal year 2008, of which $4,000,000 shall be for the grants described in subparagraph (A)(ii) of that paragraph;

1 (2) $55,000,000 for fiscal year 2009, of which
2 $10,000,000 shall be for the grants described in
3 subparagraph (A)(ii) of that paragraph;
4 (3) $60,000,000 for fiscal year 2010, of which
5 $10,000,000 shall be for the grants described in
6 subparagraph (A)(ii) of that paragraph;
7 (4) $60,000,000 for fiscal year 2011, of which
8 $10,000,000 shall be for the grants described in
9 subparagraph (A)(ii) of that paragraph; and
10 (5) $60,000,000 for fiscal year 2012, of which
11 $10,000,000 shall be for the grants described in
12 subparagraph (A)(ii) of that paragraph.

13 **SEC. 206. HIGH-NEED LOCAL EDUCATIONAL AGENCY DEFI-**
14 **NITION.**

15 Section 4(8) of the National Science Foundation Au-
16 thorization Act of 2002 (42 U.S.C. 1862n note) is amend-
17 ed to read as follows:
18 "(8) HIGH-NEED LOCAL EDUCATIONAL AGEN-
19 CY.—The term 'high-need local educational agency'
20 means a local educational agency that—
21 "(A) is receiving grants under title I of the
22 Elementary and Secondary Education Act of
23 1965 (20 U.S.C. 6301 et seq) as a result of
24 having within its jurisdiction concentrations of
25 children from low income families; and

"(B) is experiencing a shortage of highly qualified teachers, as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or engineering.".

SEC. 207. TEACHER LEADERS.

Sections 4 and 9 of the National Science Foundation Authorization Act of 2002 are amended by striking "master teacher" each place it appears and inserting "teacher leader".

AMENDMENT OFFERED BY MS. EDDIE BERNICE JOHNSON OF TEXAS AND MR. EHLERS OF MICHIGAN TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362

At the end of the bill, add the following new sections (and amend the table of contents accordingly):

1 **SEC. 208. LABORATORY SCIENCE PILOT PROGRAM.**

2 (a) FINDINGS.—The Congress finds the following:

3 (1) To remain competitive in science and tech-
4 nology in the global economy, the United States
5 must increase the number of students graduating
6 from high school prepared to pursue postsecondary
7 education in science, technology, engineering, and
8 mathematics.

9 (2) There is broad agreement in the scientific
10 community that learning science requires direct in-
11 volvement by students in scientific inquiry and that
12 laboratory experience is so integral to the nature of
13 science that it must be included in every science pro-
14 gram for every science student.

15 (3) In America's Lab Report, the National Re-
16 search Council concluded that the current quality of

1 laboratory experiences is poor for most students and
2 that educators and researchers do not agree on how
3 to define high school science laboratories or on their
4 purpose, hampering the accumulation of research on
5 how to improve labs.
6 (4) The National Research Council found that
7 schools with higher concentrations of non-Asian mi-
8 norities and schools with higher concentrations of
9 poor students are less likely to have adequate labora-
10 tory facilities than other schools.
11 (5) The Government Accountability Office re-
12 ported that 49.1 percent of schools where the minor-
13 ity student population is greater than 50.5 percent
14 reported not meeting functional requirements for
15 laboratory science well or at all.
16 (6) 40 percent of those college students who left
17 the science fields reported some problems related to
18 high school science preparation, including lack of
19 laboratory experience and no introduction to theo-
20 retical or to analytical modes of thought.
21 (7) It is in the national interest for the Federal
22 Government to invest in research and demonstration
23 projects to improve the teaching of laboratory
24 science in the Nation's high schools.

1 (b) GRANT PROGRAM.—Section 8(8) of the National
2 Science Foundation Authorization Act of 2002 is amend-
3 ed—
4 (1) by redesignating subparagraphs (A) through
5 (F) as clauses (i) through (vi), respectively;
6 (2) by inserting "(A)" before "A program of
7 competitive"; and
8 (3) by inserting at the end the following new
9 subparagraphs:
10 "(B) In accordance with subparagraph (A)(v),
11 the Director shall establish a research pilot program
12 designated as 'Partnerships for Access to Labora-
13 tory Science' to award grants to partnerships to im-
14 prove laboratories and provide instrumentation as
15 part of a comprehensive program to enhance the
16 quality of mathematics, science, engineering, and
17 technology instruction at the secondary school level.
18 Grants under this subparagraph may be used for—
19 "(i) purchase, rental, or leasing of equip-
20 ment, instrumentation, and other scientific edu-
21 cational materials;
22 "(ii) maintenance, renovation, and im-
23 provement of laboratory facilities;
24 "(iii) development of instructional pro-
25 grams designed to integrate the laboratory ex-

1 perience with classroom instruction and to be
2 consistent with State mathematics and science
3 academic achievement standards;
4 "(iv) training in laboratory safety for
5 school personnel;
6 "(v) design and implementation of hands-
7 on laboratory experiences to encourage the in-
8 terest of individuals identified in section 33 or
9 34 of the Science and Engineering Equal Op-
10 portunities Act (42 U.S.C. 1885a or 1885b) in
11 mathematics, science, engineering, and tech-
12 nology and help prepare such individuals to
13 pursue postsecondary studies in these fields;
14 and
15 "(vi) assessment of the activities funded
16 under this subparagraph.
17 "(C) Grants may be made under this paragraph
18 only to a partnership—
19 "(i) for a project that includes significant
20 teacher training and professional development
21 components; or
22 "(ii) that establishes that appropriate
23 teacher training and professional development
24 is being addressed, or has been addressed,
25 through other means.

1 "(D) Grants awarded under subparagraph (B)
2 shall be to a partnership that—
3 "(i) includes an institution of higher edu-
4 cation or a community college;
5 "(ii) includes a high-need local educational
6 agency;
7 "(iii) includes a business or eligible non-
8 profit organization; and
9 "(iv) may include a State educational
10 agency, other public agency, National Labora-
11 tory, or community-based organization.
12 "(E) The Federal share of the cost of activities
13 carried out using amounts from a grant under sub-
14 paragraph (B) shall not exceed 50 percent.
15 "(F) The Director shall require grant recipients
16 to submit a report to the Director on the results of
17 the project supported by the grant.".
18 (c) REPORT.—The Director shall evaluate the effec-
19 tiveness of activities carried out under the research pilot
20 projects funded by the grant program established pursu-
21 ant to the amendment made by subsection (b) in improv-
22 ing student performance in mathematics, science, engi-
23 neering, and technology. A report documenting the results
24 of that evaluation shall be submitted to the Committee on
25 Science and Technology of the House of Representatives

1 and the Committees on Commerce, Science, and Transpor-
2 tation and on Health, Education, Labor, and Pensions of
3 the Senate not later than 5 years after the date of enact-
4 ment of this Act. The report shall identify best practices
5 and materials developed and demonstrated by grant
6 awardees.

7 (d) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the National Science
9 Foundation to carry out this section and the amendments
10 made by this section $5,000,000 for fiscal year 2008, and
11 such sums as may be necessary for each of the 3 suc-
12 ceeding fiscal years.

13 **SEC. 209. STUDY ON LABORATORY EQUIPMENT DONATIONS**
14 **FOR SCHOOLS.**

15 Not later than 2 years after the date of enactment
16 of this Act, the Director shall transmit a report to the
17 Congress examining the extent to which institutions of
18 higher education are donating used laboratory equipment
19 to elementary and secondary schools. The Director, in con-
20 sultation with the Secretary of Education, shall survey in-
21 stitutions of higher education to determine—

22 (1) how often, how much, and what type of
23 equipment is donated;

24 (2) what criteria or guidelines the institutions
25 are using to determine what types of equipment can

1 be donated, what condition the equipment should be
2 in, and which schools receive the equipment;
3 (3) whether the institutions provide any support
4 to, or follow-up with the schools; and
5 (4) how appropriate donations can be encour-
6 aged.

AMENDMENT OFFERED BY MS. EDDIE BERNICE JOHNSON OF TEXAS TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362

Page 28, line 17, insert ''and minority-serving institutions'' after ''2-year colleges''.

AMENDMENT OFFERED BY MS. GIFFORDS OF ARIZONA TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362

Page 25, lines 1 through 3, amend paragraph (2) to read as follows:

1 (2) by amending subparagraph (B) to read as
2 follows:
3 "(B) In selecting projects under subparagraph
4 (A)(i), the Director shall strive to increase the num-
5 ber of students studying toward and completing bac-
6 calaureate degrees, concentrations, or certificates in
7 science, mathematics, engineering, or technology who
8 are—
9 "(i) individuals identified in section 33 or
10 34 of the Science and Engineering Equal Op-
11 portunities Act (42 U.S.C. 1885a or 1885b); or
12 "(ii) graduates of a secondary school that
13 is administered by a local educational agency
14 that is receiving grants under title I of the Ele-
15 mentary and Secondary Education Act of 1965
16 (20 U.S.C. 6301 et seq) as a result of having

1 within its jurisdiction concentrations of children

2 from low income families.";

AMENDMENT OFFERED BY MS. GIFFORDS OF ARIZONA TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362

Page 21, line 10, redesignate paragraph (3) as paragraph (4).

Page 21, after line 9, insert the following new paragraph:

1 (3) AWARDS.—In awarding grants under this
2 section, the Director shall give priority to applica-
3 tions that propose programs that will attract mathe-
4 matics and science teachers from local educational
5 agencies that—
6 (A) are receiving grants under title I of the
7 Elementary and Secondary Education Act of
8 1965 (20 U.S.C. 6301 et seq) as a result of
9 having within their jurisdictions concentrations
10 of children from low income families; and
11 (B) are experiencing a shortage of highly
12 qualified teachers, as defined in section 9101 of
13 the Elementary and Secondary Education Act

of 1965 (20 U.S.C. 7801), in the fields of science, mathematics, or technology.

AMENDMENT OFFERED BY MR. AKIN TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 362

Page 23, line 17, insert "Recommendations made under this section shall not be considered a mandate of specific K–12 curricula." after "the national panel.".

H.R. 362 SUBSTITUTE AMENDMENT

- Inserts "technology" in all references to K–12 science and mathematics education.
- Allows Noyce Program scholarship recipients to complete program within five years, rather than in four years.
- For review of applications under the Noyce program, adds the requirement for NSF to consider the ability of the applicant to attract women and minority students.
- Revises Noyce program reporting requirements to track proportion of graduates who teach in high-need schools, who fail to fulfill their teaching commitment in a high-need school, and who persist in teaching beyond their service commitment, including in high-need schools.
- Provides a single authorization of appropriations for each year of the Noyce program (removes floors and ceilings for "capacity building activities").
- Replaces references to AP and IB courses with "challenging math, science, and technology college-preparatory courses, including AP and IB courses".
- Allows part-time Masters' degree programs to cover three years, rather than being limited to two years.
- Redefines "high-need local education agency"—concentration of children from low income families AND shortage of highly qualified teachers.
- Eliminates the term "master teacher" in favor of "teacher leader."

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