

BUILDING BLOCKS OF STEM ACT

FEBRUARY 13, 2018.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. SMITH of Texas, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany H.R. 3397]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 3397) to direct the National Science Foundation to support STEM education research focused on early childhood, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Building Blocks of STEM Act”.

SEC. 2. FINDINGS.

The Congress finds the following:

(1) The National Science Foundation has made the largest financial investment in STEM education of all Federal agencies, and plays a very powerful role in helping to set research and policy agendas.

(2) Studies have found that children who engage in scientific activities from an early age develop positive attitudes toward science and are more likely to pursue STEM expertise and careers later on.

(3) However, the majority of current research focuses on increasing STEM opportunities for students in middle school and older.

(4) Women remain widely underrepresented in the STEM workforce and this gender disparity extends down through all levels of education. Strategic funding of programs is needed in order to understand and address the root cause of this gap.

SEC. 3. DEFINITIONS.

In this Act:

(1) **DIRECTOR.**—The term “Director” means the Director of the National Science Foundation.

(2) **EARLY CHILDHOOD.**—The term “early childhood” applies to children from birth through the age of 10.

(3) **INSTITUTION OF HIGHER EDUCATION.**—The term “institution of higher education” has the meaning given the term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(4) **LOCAL EDUCATIONAL AGENCY.**—The term “local educational agency” has the meaning given the term in section 8101 of the Elementary and Secondary Education Act of 1965 (20 USC 7801), except that such term also includes preschools, after-school programs, and summer programs.

(5) **STEM.**—The term “STEM” has the meaning given the term in section 2 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6621 note).

(6) **YOUNG GIRLS.**—The term “young girls” means female individuals who have not attained the age of 11.

SEC. 4. SUPPORTING STEM RESEARCH ON EARLY CHILDHOOD.

In awarding grants under the Discovery Research PreK–12 program, the Director shall consider age distribution in order to more equitably allocate funding for research studies with a focus on early childhood.

SEC. 5. SUPPORTING GIRLS IN STEM EDUCATION AND COMPUTER SCIENCE.

(a) **RESEARCH GRANTS.**—

(1) **IN GENERAL.**—The Director shall award grants, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations), to accelerate research efforts to increase understanding of the factors that contribute to the participation of young girls in STEM activities.

(2) **RESEARCH AREAS.**—Research areas funded by a grant under this subsection may include—

(A) the role of teacher training and professional development, including effective incentive structures to encourage teachers to participate in such training and professional development, in encouraging or discouraging young girls from participating in STEM activities;

(B) the role of teachers in shaping young girls’ perceptions of STEM and discouraging such girls from participating in STEM activities;

(C) the role of other facets of the learning environment on the willingness of young girls to participate in STEM activities, including learning materials and textbooks, classroom decorations, seating arrangements, use of media and technology, classroom culture, and gender composition of students during group work;

(D) the role of parents and other caregivers in encouraging or discouraging young girls from participating in STEM activities;

(E) the types of STEM activities that elicit greater participation by young girls;

(F) the role of mentorship and best practices in finding and utilizing mentors;

(G) the role of informal and out-of-school STEM learning opportunities on girls’ perception of and participation in STEM activities; and

(H) any other activity the Director determines will accomplish the goals of this subsection.

(3) **GRANT RECIPIENT REPORT.**—An entity awarded a grant under this subsection shall report to the Director, at such time and in such manner as the Director may require, on the activities carried out and materials developed using such grant funds.

(b) DEVELOPMENT AND TESTING OF SCALABLE MODELS FOR INCREASED ENGAGEMENT.—

(1) IN GENERAL.—The Director shall award grants, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations), to develop and evaluate interventions in pre-K and elementary school classrooms that increase participation of young girls in computer science activities.

(2) PARTNERSHIPS.—In order to be eligible to receive a grant under this subsection, an institute of higher education, nonprofit organization, or consortium, shall enter into a partnership with one or more local educational agency or State in carrying out the activities funded by such grant.

(3) USES OF FUNDS.—Grants awarded under this subsection shall be used for activities that draw upon the expertise of the partner entities described in paragraph (2) to increase participation of young girls in computer science activities, including—

(A) offering training and professional development programs, including summer or academic year institutes or workshops, designed to strengthen the capabilities of pre-K and elementary school teachers and to familiarize such teachers with the role of gender bias in the classroom;

(B) offering innovative preservice and in-service programs that instruct teachers on gender-inclusive practices for teaching computing concepts;

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

(D) developing a cadre of master teachers who will promote reform and the adoption of gender-inclusive practices in teaching computer science concepts in early childhood education;

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

(F) developing or adapting pre-K and elementary school computer science curricular materials that incorporate contemporary research on the science of learning, particularly with respect to gender inclusion;

(G) developing and offering gender-inclusive computer science enrichment programs for students, including after-school and summer programs;

(H) providing mentors for girls in person and through the Internet to support such girls in participating in computer science activities;

(I) engaging parents of girls about the difficulties faced by girls to maintain an interest and desire to participate in computer science activities, and enlisting the help of parents in overcoming these difficulties;

(J) acquainting girls with careers in computer science and encouraging girls to consider careers in such field; and

(K) any other activities the Director determines will accomplish the goals of this subsection.

(4) GRANT RECIPIENT REPORT.—An entity awarded a grant under this subsection shall report to the Director, at such time and in such manner as the Director may require, on the activities carried out, materials developed using such grant funds, and the outcomes for students served by such grant.

(5) EVALUATION REQUIRED.—Not later than 4 years after the date of enactment of this Act, the Director shall evaluate the grant program under this subsection. At a minimum, such evaluation shall—

(A) use a common set of benchmarks and assessment tools to identify best practices and materials developed and demonstrated by the partnerships described in paragraph (2); and

(B) to the extent practicable, compare the effectiveness of practices and materials developed and demonstrated by such partnerships with those of partnerships funded by other local or State government or Federal Government programs.

(6) DISSEMINATION OF RESULTS.—

(A) EVALUATION RESULTS.—The Director shall make publicly available free of charge on an Internet website and shall submit to Congress the results of the evaluation required under paragraph (5).

(B) MATERIALS.—The Director shall ensure that materials developed under a program funded by a grant under this subsection, that are demonstrated to be effective in achieving the goals of this subsection (as determined by the Director), are made publicly available free of charge on an Internet website, including through an arrangement with an outside entity.

(7) ANNUAL MEETING.—The Director may convene an annual meeting of the partnerships participating in a program funded by a grant under this subsection, for the purpose of fostering greater national collaboration.

(8) TECHNICAL ASSISTANCE.—At the request of a partnership seeking a grant under this subsection, the Director shall provide the partnership with technical assistance in meeting any requirement of this subsection.

SEC. 6. COMPUTER SCIENCE IN THE ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.

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

(1) by striking “and mathematics” each place it appears and inserting “mathematics, informatics, and computer science”;

(2) in subsection (a)(3)(B), by striking “or mathematics” and inserting “mathematics, informatics, and computer science”;

(3) in subsections (b)(1)(D)(i), (c)(1)(A), (d)(1), and (i)(7), by striking “or mathematics” each place it appears and inserting “mathematics, informatics, or computer science”; and

(4) in subsection (i)(5), by striking “or mathematics” and inserting “mathematics, or computer science”.

COMMITTEE STATEMENT AND VIEWS

PURPOSE AND SUMMARY

The purpose of H.R. 3397, the “Building Blocks of STEM Act,” is to direct the National Science Foundation (NSF) to more equitably allocate funding for research in the Discovery Research PreK–12 (DRK–12) program to studies that include a focus on early childhood (birth through age 10). The bill does not require a minimum percentage of grant awards go toward early childhood, but instead directs NSF to take a strategic approach and consider age when awarding grants—with the goal of increasing the research of early childhood science, technology, engineering, and mathematics (STEM) programs.

In addition, the bill authorizes two NSF grant programs; one to accelerate research to identify and improve understanding of what factors contribute to the willingness or unwillingness of young girls to participate in STEM and the other to develop and evaluate intervention programs in pre-K and elementary classrooms aimed at increasing participation of young girls in computer science activities. The bill also adds computer science and informatics to the Robert Noyce Teacher Scholarship Program.

BACKGROUND AND NEED FOR LEGISLATION

NSF continues to make the largest financial investment in STEM education of all federal science agencies, and plays the leadership role in setting research and policy agendas.

Studies have found that children who engage in scientific activities from an early age develop positive attitudes toward science and are more likely to pursue an expertise and careers in STEM fields later on.

NSF’s DRK–12 program seeks to enhance the understanding and instruction of STEM for both preK–12 students and their teachers through research and development of STEM education innovations and approaches. The goal of the DRK–12 program is to provide models for use within the nation’s preK–12 STEM education effort. However, the majority of current DRK–12 research focuses on increasing STEM opportunities for students in middle and high school.

During the past decade, employment in STEM occupations has grown six times as fast as non-STEM occupations. However, women remain underrepresented in the STEM workforce. According to the National Center for Science and Engineering Statistics, women comprise 48 percent of the U.S. workforce but 24 percent of STEM workers. This gender disparity extends through all levels of education. Strategic funding by existing NSF STEM programs is needed in order to understand and address the root cause of this gap.

Finally, while informatics, the science of processing data for storage and retrieval, is one of the fastest growing STEM career fields, it is not formally included under the Robert Noyce Teacher Scholarship Program. The Bureau of Labor Statistics projects the number of health informatics specialists to grow fifteen percent by 2024, which is faster than the projected job growth of all other US professions. In order to meet this demand, we will need teachers trained to understand this growing field and develop the next generation of computer science workers.

LEGISLATIVE HISTORY

On March 9, 2017, the Research and Technology Subcommittee held a hearing entitled, “National Science Foundation Part 1: Overview and Oversight.” Witnesses were: Dr. France Córdova, Director, National Science Foundation; Ms. Allison Lerner, Inspector General, National Science Foundation.

On March 21, 2017, the Research and Technology Subcommittee held a hearing entitled, “National Science Foundation Part II: Future Opportunities and Challenges for Science.” Witnesses were: Dr. Joan Ferrini-Mundy, Acting Chief Operating Officer, National Science Foundation; Dr. Maria Zuber, Chair, National Science Board; Dr. Jeffrey Spies, Co-Founder and Chief Technology Officer, Center for Open Science and Assistant Professor, University of Virginia; Dr. Keith Yamamoto, Vice Chancellor for Science Policy and Strategy, University of California, San Francisco.

On July 26, 2017, the Research and Technology Subcommittee held a hearing entitled, “STEM and Computer Science Education: Preparing the 21st Century Workforce.” Witnesses were: Mr. James Brown, Executive Director, STEM Education Coalition; Mr. Pat Yongpradit, Chief Academic Officer, Code.org; Dr. A. Paul Alivisatos, Executive Vice Chancellor & Provost, Vice Chancellor for Research, and Professor of Chemistry and Materials Science & Engineering, University of California, Berkeley; Ms. Dee Mooney, Executive Director, Micron Technology Foundation.

On November 15, the full Committee approved by voice vote H.R. 3397, the Building Blocks of STEM Act, with an amendment in the nature of a substitute by Research and Technology Subcommittee Chair Barbara Comstock.

COMMITTEE VIEWS

Priority of research into early childhood STEM programs

Young children have a natural curiosity that can be fostered into an intense interest in science, technology, engineering, math, and computer science at an early age. As part of the billions of dollars NSF has invested into research and programs to increase STEM

participation, the DRK-12 program has largely focused on increasing STEM opportunities for students in middle school and above. While the Committee recognizes that these programs are beneficial, studies have found that children who engage in scientific activities from an earlier age develop positive attitudes towards science and are more likely to pursue higher education and careers in STEM fields. However, H.R. 3397 does not set an amount of DRK-12 grant awards that have to go toward early childhood studies and research. But it does direct NSF to take a much more strategic approach and consider age when awarding grants to increase research of early childhood STEM programs. If the U.S. is to remain competitive in this increasingly dynamic global economy, the Committee finds it is essential to promote STEM education and careers to youth as early as possible.

Supporting girls in STEM

As demand for skilled STEM workers continues to grow, the talent of the nation's young men *and* women must be harnessed. The Committee recognizes that girls' attitudes towards STEM fields can be cemented early in their lives. To address the national interest in attracting more girls and women to STEM studies and careers, H.R. 3397 directs NSF to conduct research aimed at identifying the most effective means of encouraging and spurring young girls' (birth to age 11) interest in STEM subjects. The amended legislation also directs NSF to develop scalable models to increase young girls' participation in computer science. It is important to support programs that provide girls experience in computer related fields and sets them on the path towards acquiring the skills necessary to compete for these well-paying 21st century jobs.

SECTION-BY-SECTION

Section 1. Short title

Building Blocks of STEM Act.

Section 2. Findings

This section finds that children who engage in scientific activities at an early age develop positive attitudes toward science and are more likely to pursue STEM careers, yet a majority of current NSF STEM research focuses on older students. This section also finds that women remain underrepresented in the STEM workforce.

Section 3. Definitions

This section defines the terms "early childhood" as children from birth through age 10; "STEM" as science, technology, engineering, and math, including computer science; and "young girls" as female children from birth through age 10.

Section 4. Supporting STEM research on early childhood

This section requires the Director, when awarding grants under the DRK-12 program, to consider age distribution in order to more equitably allocate funding for research studies.

Section 5. Supporting girls in STEM education and computer science

This section authorizes NSF grants to accelerate research to identify and improve understanding of what factors contribute to the willingness or unwillingness of young girls to participate in STEM and to develop and evaluate intervention programs in pre-K and elementary classrooms aimed at increasing participation of young girls in computer science activities.

Section 6. Computer science in the Robert Noyce Teacher Scholarship Program

This section adds computer science and informatics to the eligible topics of study included in NSF's Robert Noyce Teacher Scholarship Program.

EXPLANATION OF AMENDMENTS

A substitute offered by Rep. Barbara Comstock was adopted by the Committee. The amendment added two provisions to the bill. The first provision directs NSF to competitively award grants that will accelerate research efforts to increase understanding of the factors that contribute to the participation of young girls in STEM activities. That provision also directs NSF to develop scalable models to increase young girls' participation in computer science. The second provision adds informatics and computer science to the definition of STEM in the Robert Noyce Teacher Scholarship Program.

COMMITTEE CONSIDERATION

On November 15, 2017, the Committee met in open session and ordered reported favorably the bill, H.R. 3397, as amended, by voice vote, a quorum being present.

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

Section 102(b)(3) of Public Law 104–1 requires a description of the application of this bill to the legislative branch where the bill relates to the terms and conditions of employment or access to public services and accommodations. This bill directs NSF to more equitably allocate funding for research in the DRK–12 program to studies that include a focus on early childhood. As such, this bill does not relate to employment or access to public services and accommodations.

Legislative branch employees and their families, to the extent that they are otherwise eligible for the benefits provided by this legislation, have equal access to its benefits.

STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X of the Rules of the House of Representatives, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

H.R. 3397 directs the NSF to more equitably allocate funding for research in the DRK-12 program to studies that include a focus on early childhood.

DUPLICATION OF FEDERAL PROGRAMS

No provision of H.R. 3397 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, a program that was included in any report from the Government Accountability Office to Congress pursuant to section 21 of Public Law 111-139, or a program related to a program identified in the most recent Catalog of Federal Domestic Assistance.

DISCLOSURE OF DIRECTED RULE MAKINGS

The Committee estimates that enacting H.R. 3397 does not direct the completion of any specific rule makings within the meaning of 5 U.S.C. 551.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of 5 U.S.C. App., Section 5(b).

UNFUNDED MANDATE STATEMENT

Section 423 of the Congressional Budget and Impoundment Control Act (as amended by Section 101(a)(2) of the Unfunded Mandate Reform Act, P.L. 104-4) requires a statement as to whether the provisions of the reported include unfunded mandates. In compliance with this requirement the Committee has received a letter from the Congressional Budget Office included herein.

EARMARK IDENTIFICATION

H.R. 3397 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9 of rule XXI.

COMMITTEE ESTIMATE

Clause 3(d)(2) of rule XIII of the Rules of the House of Representatives requires an estimate and a comparison by the Committee of the costs that would be incurred in carrying out H.R. 3397. However, clause 3(d)(3)(B) of that rule provides that this requirement does not apply when the Committee has included in its report a timely submitted cost estimate of the bill prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act.

BUDGET AUTHORITY AND CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

With respect to the requirements of clause 3(c)(2) of rule XIII of the Rules of the House of Representatives and section 308(a) of the Congressional Budget Act of 1974 and with respect to requirements of clause (3)(c)(3) of rule XIII of the Rules of the House of Rep-

representatives and section 402 of the Congressional Budget Act of 1974, the Committee has received the following cost estimate for H.R. 3397 from the Director of Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, December 15, 2017.

Hon. LAMAR SMITH,
*Chairman, Committee on Science, Space, and Technology,
House of Representatives, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 3397, the Building Blocks of STEM Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Janani Shankaran.

Sincerely,

KEITH HALL,
Director.

Enclosure.

H.R. 3397—Building Blocks of STEM Act

H.R. 3397 would require the National Science Foundation (NSF) to award grants to higher education institutions and nonprofit organizations to study factors that contribute to participation in STEM (science, technology, engineering, and math) education by young girls, and develop and evaluate methods to increase young girls' participation in computer science. The bill also would modify the eligibility and selection criteria of NSF's Discovery Research PreK–12 and Robert Noyce Teacher Scholarship programs.

According to NSF, three existing programs—Education and Human Resources Core Research, Discovery Research PreK–12, and Computer Science for All: Research Practitioner Partnerships—currently award grants that are similar to those that would be authorized under H.R. 3397. In recent years, NSF has spent around \$155 million annually on those programs. Considering information from NSF, CBO expects that the agency could meet the bill's requirements by continuing to operate those existing programs. CBO estimates that any additional administrative costs incurred under H.R. 3397 would be insignificant; any such spending would be subject to the availability of appropriated funds.

Enacting H.R. 3397 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

CBO estimates that enacting H.R. 3397 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

H.R. 3397 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act.

The CBO staff contact for this estimate is Janani Shankaran. The estimate was approved by H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

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, and existing law in which no change is proposed is shown in roman):

**NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT
OF 2002**

* * * * *

SEC. 10. ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.

(a) SCHOLARSHIP PROGRAM.—

(1) IN GENERAL.—The Director shall carry out a program to award grants to eligible entities to recruit and train mathematics and science teachers and to provide scholarships and stipends to individuals participating in the program. Such program shall be known as the “Robert Noyce Teacher Scholarship Program”.

(2) MERIT REVIEW.—Grants shall be provided under this section on a competitive, merit-reviewed basis.

(3) USE OF GRANTS.—A grant provided under this section shall be used by the eligible entity—

(A) to develop and implement a program to recruit and prepare undergraduate students majoring in science, technology, engineering, [and mathematics] *mathematics, informatics, and computer science* at the eligible entity (and participating institutions of higher education of the consortium, if applicable) to become qualified as mathematics and science teachers, through—

(i) administering scholarships in accordance with subsection (c);

(ii) offering academic courses and early clinical teaching experiences designed to prepare students participating in the program to teach in elementary schools and secondary schools, including such preparation as is necessary to meet requirements for teacher certification or licensing;

(iii) offering programs to students participating in the program, both before and after the students receive their baccalaureate degree, to 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 the students’ fields; and

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

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

(i) administering stipends in accordance with subsection (d);

(ii) offering academic courses and clinical teaching experiences designed to prepare stipend recipients to teach in elementary schools and secondary schools

served by a high need local educational agency, including such preparation as is necessary to meet requirements for teacher certification or licensing; and

(iii) offering programs to stipend recipients, both during and after matriculation in the program for which the stipend is received, to enable recipients to become better mathematics and science teachers, to fulfill the service requirements of this section, and to exchange ideas with others in the students' fields.

(4) ELIGIBILITY REQUIREMENT.—

(A) IN GENERAL.—To be eligible to receive a grant under this section, an eligible entity shall ensure that specific faculty members and staff from the science, technology, engineering, **[and mathematics]** *mathematics, informatics, and computer science* departments and specific education faculty of the eligible entity (and participating institutions of higher education of the consortium, if applicable) are designated to carry out the development and implementation of the program.

(B) INCLUSION OF MASTER TEACHERS.—An eligible entity (and participating institutions of higher education of the consortium, if applicable) receiving a grant under this section may also include master teachers in the development of the pedagogical content of the program and in the supervision of students participating in the program in their clinical teaching experiences.

(C) ACTIVE PARTICIPANTS.—No eligible entity (or participating institution of higher education of the consortium, if applicable) shall be eligible for a grant under this section unless faculty from the science, technology, engineering, **[and mathematics]** *mathematics, informatics, and computer science* departments of the eligible entity (and participating institutions of higher education of the consortium, if applicable) are active participants in the program.

(5) AWARDS.—In awarding grants under this section, the Director shall ensure that the eligible entities (and participating institutions of higher education of the consortia, if applicable) represent a variety of types of institutions of higher education. In support of this goal, the Director shall broadly disseminate information about when and how to apply for grants under this section, including by conducting outreach to—

(A) historically Black colleges and universities that are part B institutions, as defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)); and

(B) minority institutions, as defined in section 365(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k(3)).

(6) SUPPLEMENT NOT SUPPLANT.—Grant funds provided under this section shall be used to supplement, and not supplant, other Federal or State funds available for the type of activities supported by the grant.

(b) SELECTION PROCESS.—

(1) APPLICATION.—An eligible entity 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) in the case of an applicant that is submitting an application on behalf of a consortium of institutions of higher education, a description of the participating institutions of higher education and the roles and responsibilities of each such institution;

(B) a description of the 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;

(C) evidence that the applicant has the capability to administer the program in accordance with the provisions of this section, which may include a description of any existing programs at the applicant eligible entity (and participating institutions of higher education of the consortium, if applicable) that are targeted to the education of mathematics and science teachers and the number of teachers graduated annually from such programs;

(D) a description of the academic courses and clinical teaching experiences required under subparagraphs (A)(ii) and (B)(ii) of subsection (a)(3), as applicable, including—

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

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

(iii) evidence of agreements between the applicant and the schools or local educational agencies that are identified as the locations at which clinical teaching experiences will occur;

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

(F) an identification of the applicant eligible entity's science, technology, engineering, **[and mathematics]** *mathematics, informatics, and computer science* faculty and its education faculty (and such faculty of participating institutions of higher education of the consortium, if applicable) who will carry out the development and implementation of the program as required under subsection (a)(4); and

(G) a description of the process the applicant will use to fulfill the requirements of subsection (f).

(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 (and the participating institutions of higher education of the consortium, if applicable) to effectively carry out the program;

(B) the extent to which the applicant's science, technology, engineering, [and mathematics] *mathematics, informatics, and computer science* faculty and its education faculty (and such faculty of participating institutions of higher education of the consortium, if applicable) have worked or will work collaboratively to design new or revised curricula that recognize the specialized pedagogy required to teach science, technology, engineering, [and mathematics] *mathematics, informatics, and computer science* effectively in elementary schools and secondary schools;

(C) the extent to which the applicant (and the participating institutions of higher education of the consortium, if applicable) is committed to making the program a central organizational focus;

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

(E) the number and academic qualifications of the students who will be served by the program; and

(F) the ability of the applicant (and the participating institutions of higher education of the consortium, if applicable) to recruit students who would otherwise not pursue a career in teaching in elementary schools or secondary schools and 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—

(A) are majoring in science, technology, engineering, [or mathematics] *mathematics, informatics, or computer science*; and

(B) have attained at least junior status in a baccalaureate degree program.

(2) SELECTION.—Individuals shall be selected to receive scholarships primarily on the basis of academic merit, 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) 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 \$10,000 per year, except that no individual shall receive for any year more than the cost of attendance at that individual's institution. Full-time students may receive annual scholarships through the completion of a baccalaureate degree program, not to exceed a maximum of 3 years. Part-time students may receive scholarships that are prorated according to such students' enrollment status, not to exceed 6 years of scholarship support.

(4) SERVICE OBLIGATION.—If an individual receives a scholarship under this section, such individual shall be required to complete, within 8 years after graduation from the baccalaureate degree program for which the scholarship was award-

ed, 2 years of service as a mathematics or science teacher for each full scholarship award received, with a maximum service requirement of 6 years. Service required under this paragraph shall be performed in a high need local educational agency.

(d) STIPENDS.—

(1) IN GENERAL.—Stipends under this section shall be available only to science, technology, engineering, **[or mathematics]** *mathematics, informatics, or computer science* professionals who, while receiving the stipend, are enrolled in a program 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) AMOUNT AND DURATION.—Stipends under this section shall be not less than \$10,000 per year, except that no individual shall receive for any year more than the cost of attendance at such individual's institution. Individuals may receive a maximum of 1 year of stipend support, except that if an individual is enrolled in a part-time program, such amount shall be prorated according to the length of the program.

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

(e) CONDITIONS OF SUPPORT.—As a condition of acceptance of a scholarship or stipend under this section, a recipient of a scholarship or stipend shall enter into an agreement with the eligible entity—

(1) accepting the terms of the scholarship or stipend pursuant to subsection (c) or subsection (d);

(2) agreeing to provide the eligible entity with annual certification of employment and up-to-date contact information and to participate in surveys conducted by the eligible entity as part of an ongoing assessment program; and

(3) establishing that if the service obligation required under this section is not completed, all or a portion of the scholarship or stipend received under this section shall be repaid in accordance with subsection (g).

(f) COLLECTION FOR NONCOMPLIANCE.—

(1) MONITORING COMPLIANCE.—An eligible entity receiving a grant under this section shall, as a condition of participating in the program, enter into an agreement with the Director to monitor the compliance of scholarship or stipend recipients with their respective service requirements.

(2) COLLECTION OF REPAYMENT.—

(A) IN GENERAL.—In the event that a scholarship or stipend recipient is required to repay the scholarship or stipend under subsection (g), the eligible entity shall—

(i) be responsible for determining the repayment amounts and for notifying the recipient and the Director of the amount owed; and

(ii) collect such repayment amount within a period of time as determined under the agreement described in paragraph (1), or the repayment amount shall be treated as a loan in accordance with subparagraph (C).

(B) RETURNED TO TREASURY.—Except as provided in subparagraph (C), any such repayment shall be returned to the Treasury of the United States.

(C) RETAIN PERCENTAGE.—An eligible entity may retain a percentage of any repayment the eligible entity collects to defray administrative costs associated with the collection. The Director shall establish a single, fixed percentage that will apply to all eligible entities.

(g) FAILURE TO COMPLETE SERVICE OBLIGATION.—

(1) GENERAL RULE.—If an individual who has received a scholarship or stipend under this section—

(A) fails to maintain an acceptable level of academic standing in the educational institution in which the individual is enrolled, as determined by the Director;

(B) is dismissed from such educational institution for disciplinary reasons;

(C) withdraws from the program for which the award was made before the completion of such program;

(D) declares that the individual does not intend to fulfill the service obligation under this section; or

(E) fails to fulfill the service obligation of the individual under this section,

such individual shall be liable to the United States as provided in paragraph (2).

(2) AMOUNT OF REPAYMENT.—

(A) LESS THAN ONE YEAR OF SERVICE.—If a circumstance described in paragraph (1) occurs before the completion of 1 year of a service obligation under this section, the total amount of awards received by the individual under this section shall be repaid or such amount shall be treated as a loan to be repaid in accordance with subparagraph (C).

(B) MORE THAN ONE YEAR OF SERVICE.—If a circumstance described in subparagraph (D) or (E) of paragraph (1) occurs after the completion of 1 year of a service obligation under this section—

(i) for a scholarship recipient, the total amount of scholarship awards received by the individual under this section, reduced by the ratio of the number of years of service completed divided by the number of years of service required, shall be repaid or such amount shall be treated as a loan to be repaid in accordance with subparagraph (C); and

(ii) for a stipend recipient, one-half of the total amount of stipends received by the individual under this section shall be repaid or such amount shall be treated as a loan to be repaid in accordance with subparagraph (C).

(C) REPAYMENTS.—The loans described under subparagraphs (A) and (B) shall be payable to the Federal Government, consistent with the provisions of part B or D of title IV of the Higher Education Act of 1965, and shall be subject to repayment in accordance with terms and conditions specified by the Director (in consultation with the Secretary of Education) in regulations promulgated to carry out this paragraph.

(3) EXCEPTIONS.—The Director may provide for the partial or total waiver or suspension of any service or payment obligation by an individual under this section whenever compliance by the individual with the obligation is impossible or would involve extreme hardship to the individual, or if enforcement of such obligation with respect to the individual would be unconscionable.

(h) DATA COLLECTION.—An eligible entity receiving a grant under this section shall supply to the Director any relevant statistical and demographic data on scholarship and stipend recipients the Director may request, including information on employment required under this section.

(i) DEFINITIONS.—In this section—

(1) the term “cost of attendance” has the meaning given such term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087ll);

(2) the term “eligible entity” means—

(A) an institution of higher education; or

(B) an institution of higher education that receives grant funds on behalf of a consortium of institutions of higher education;

(3) the term “fellowship” means an award to an individual under section 10A;

(4) the term “high need local educational agency” has the meaning given such term in section 201 of the Higher Education Act of 1965 (20 U.S.C. 1021);

(5) the term “mathematics and science teacher” means a science, computer science, technology, engineering, [or mathematics] *mathematics, or computer science* teacher at the elementary school or secondary school level;

(6) the term “scholarship” means an award under subsection (c);

(7) the term “science, technology, engineering, or mathematics professional” means a person who holds a baccalaureate, master’s, or doctoral degree in science, technology, engineering, [or mathematics] *mathematics, informatics, or computer science*, and is working in or had a career in such field or a related area; and

(8) the term “stipend” means an award under subsection (d).

(j) MATHEMATICS AND SCIENCE SCHOLARSHIP GIFT FUND.—In accordance with section 11(f) of the National Science Foundation Act of 1950 (42 U.S.C. 1870(f)), the Director is authorized to accept donations from the private sector to supplement but not supplant scholarships, stipends, internships, or fellowships associated with programs under this section or section 10A.

(k) ASSESSMENT OF TEACHER SERVICE AND RETENTION.—Not later than 4 years after the date of enactment of the America

COMPETES Act, the Director shall transmit to the Committee on Health, Education, Labor, and Pensions of the Senate and the Committee on Science and Technology of the House of Representatives a report on the effectiveness of the programs carried out under this section and section 10A. The report shall include the proportion of individuals receiving scholarships, stipends, or fellowships under the program who—

(1) fulfill the individuals' service obligation required under this section or section 10A;

(2) remain in the teaching profession beyond the individuals' service obligation; and

(3) remain in the teaching profession in a high need local educational agency beyond the individuals' service obligation.

(1) EVALUATION.—Not less than 2 years after the date of enactment of the America COMPETES Act, the Director, in consultation with the Secretary of Education, shall conduct an evaluation to determine whether the scholarships, stipends, and fellowships authorized under this section and section 10A have been effective in increasing the numbers of high-quality mathematics and science teachers teaching in high need local educational agencies and whether there continue to exist significant shortages of such teachers in high need local educational agencies.

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