

115TH CONGRESS
2D SESSION

H. R. 3397

IN THE SENATE OF THE UNITED STATES

FEBRUARY 14, 2018

Received; read twice and referred to the Committee on Commerce, Science,
and Transportation

AN ACT

To direct the National Science Foundation to support STEM
education research focused on early childhood.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

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

4 **SEC. 2. FINDINGS.**

5 The Congress finds the following:

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

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

14 (3) However, the majority of current research
15 focuses on increasing STEM opportunities for stu-
16 dents in middle school and older.

17 (4) Women remain widely underrepresented in
18 the STEM workforce and this gender disparity ex-
19 tends down through all levels of education. Strategic
20 funding of programs is needed in order to under-
21 stand and address the root cause of this gap.

22 **SEC. 3. DEFINITIONS.**

23 In this Act:

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

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

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

8 (4) LOCAL EDUCATIONAL AGENCY.—The term
9 “local educational agency” has the meaning given
10 the term in section 8101 of the Elementary and Sec-
11 ondary Education Act of 1965 (20 U.S.C. 7801), ex-
12 cept that such term also includes preschools, after-
13 school programs, and summer programs.

14 (5) STEM.—The term “STEM” has the mean-
15 ing given the term in section 2 of the America COM-
16 PETES Reauthorization Act of 2010 (42 U.S.C.
17 6621 note).

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

21 **SEC. 4. SUPPORTING STEM RESEARCH ON EARLY CHILD-**
22 **HOOD.**

23 In awarding grants under the Discovery Research
24 PreK–12 program, the Director shall consider age dis-

1 tribution in order to more equitably allocate funding for
2 research studies with a focus on early childhood.

3 **SEC. 5. SUPPORTING GIRLS IN STEM EDUCATION AND COM-**
4 **PUTER SCIENCE.**

5 (a) RESEARCH GRANTS.—

6 (1) IN GENERAL.—The Director shall award
7 grants, on a competitive basis, to institutions of
8 higher education or nonprofit organizations (or con-
9 sortia of such institutions or organizations), to accel-
10 erate research efforts to increase understanding of
11 the factors that contribute to the participation of
12 young girls in STEM activities.

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

15 (A) the role of teacher training and profes-
16 sional development, including effective incentive
17 structures to encourage teachers to participate
18 in such training and professional development,
19 in encouraging or discouraging young girls from
20 participating in STEM activities;

21 (B) the role of teachers in shaping young
22 girls' perceptions of STEM and discouraging
23 such girls from participating in STEM activi-
24 ties;

1 (C) the role of other facets of the learning
2 environment on the willingness of young girls to
3 participate in STEM activities, including learn-
4 ing materials and textbooks, classroom decora-
5 tions, seating arrangements, use of media and
6 technology, classroom culture, and gender com-
7 position of students during group work;

8 (D) the role of parents and other care-
9 givers in encouraging or discouraging young
10 girls from participating in STEM activities;

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

13 (F) the role of mentorship and best prac-
14 tices in finding and utilizing mentors;

15 (G) the role of informal and out-of-school
16 STEM learning opportunities on girls' percep-
17 tion of and participation in STEM activities;
18 and

19 (H) any other activity the Director deter-
20 mines will accomplish the goals of this sub-
21 section.

22 (3) GRANT RECIPIENT REPORT.—An entity
23 awarded a grant under this subsection shall report
24 to the Director, at such time and in such manner as

1 the Director may require, on the activities carried
2 out and materials developed using such grant funds.

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

5 (1) IN GENERAL.—The Director shall award
6 grants, on a competitive basis, to institutions of
7 higher education or nonprofit organizations (or con-
8 sortia of such institutions or organizations), to de-
9 velop and evaluate interventions in pre-K and ele-
10 mentary school classrooms that increase participa-
11 tion of young girls in computer science activities.

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

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

23 (A) offering training and professional de-
24 velopment programs, including summer or aca-
25 demic year institutes or workshops, designed to

1 strengthen the capabilities of pre-K and elemen-
2 tary school teachers and to familiarize such
3 teachers with the role of gender bias in the
4 classroom;

5 (B) offering innovative preservice and in-
6 service programs that instruct teachers on gen-
7 der-inclusive practices for teaching computing
8 concepts;

9 (C) developing distance learning programs
10 for teachers or students, including developing
11 curricular materials, play-based computing ac-
12 tivities, and other resources for the in-service
13 professional development of teachers that are
14 made available to teachers through the Inter-
15 net;

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

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

22 (F) developing or adapting pre-K and ele-
23 mentary school computer science curricular ma-
24 terials that incorporate contemporary research

1 on the science of learning, particularly with re-
2 spect to gender inclusion;

3 (G) developing and offering gender-inclu-
4 sive computer science enrichment programs for
5 students, including after-school and summer
6 programs;

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

10 (I) engaging parents of girls about the dif-
11 ficulties faced by girls to maintain an interest
12 and desire to participate in computer science
13 activities, and enlisting the help of parents in
14 overcoming these difficulties;

15 (J) acquainting girls with careers in com-
16 puter science and encouraging girls to consider
17 careers in such field; and

18 (K) any other activities the Director deter-
19 mines will accomplish the goals of this sub-
20 section.

21 (4) GRANT RECIPIENT REPORT.—An entity
22 awarded a grant under this subsection shall report
23 to the Director, at such time and in such manner as
24 the Director may require, on the activities carried

1 out, materials developed using such grant funds, and
2 the outcomes for students served by such grant.

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

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

11 (B) to the extent practicable, compare the
12 effectiveness of practices and materials devel-
13 oped and demonstrated by such partnerships
14 with those of partnerships funded by other local
15 or State government or Federal Government
16 programs.

17 (6) DISSEMINATION OF RESULTS.—

18 (A) EVALUATION RESULTS.—The Director
19 shall make publicly available free of charge on
20 an Internet website and shall submit to Con-
21 gress the results of the evaluation required
22 under paragraph (5).

23 (B) MATERIALS.—The Director shall en-
24 sure that materials developed under a program
25 funded by a grant under this subsection, that

1 are demonstrated to be effective in achieving
2 the goals of this subsection (as determined by
3 the Director), are made publicly available free
4 of charge on an Internet website, including
5 through an arrangement with an outside entity.

6 (7) ANNUAL MEETING.—The Director may con-
7 vene an annual meeting of the partnerships partici-
8 pating in a program funded by a grant under this
9 subsection, for the purpose of fostering greater na-
10 tional collaboration.

11 (8) TECHNICAL ASSISTANCE.—At the request of
12 a partnership seeking a grant under this subsection,
13 the Director shall provide the partnership with tech-
14 nical assistance in meeting any requirement of this
15 subsection.

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

18 Section 10 of the National Science Foundation Au-
19 thorization Act of 2002 (42 U.S.C. 1862n–1) is amend-
20 ed—

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

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

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

8 (4) in subsection (i)(5), by striking “or mathe-
9 matics” and inserting “mathematics, or computer
10 science”.

Passed the House of Representatives February 13,
2018.

Attest:

KAREN L. HAAS,
Clerk.