

Calendar No. 180

116TH CONGRESS
1ST SESSION

S. 737

[Report No. 116-78]

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

IN THE SENATE OF THE UNITED STATES

MARCH 11, 2019

Ms. ROSEN (for herself, Mrs. CAPITO, Mr. SCHATZ, Mrs. BLACKBURN, Ms. CORTEZ MASTO, Mrs. FISCHER, Mr. BLUMENTHAL, and Mr. HOEVEN) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

AUGUST 16, 2019

Reported under authority of the order of the Senate of August 1, 2019, by Mr. WICKER, without amendment

A BILL

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,*

3 **SECTION 1. SHORT TITLE.**

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

1 **SEC. 2. FINDINGS.**

2 Congress finds the following:

3 (1) The National Science Foundation is a large
4 investor in STEM education and plays a key role in
5 setting research and policy agendas.

6 (2) While studies have found that children who
7 engage in scientific activities from an early age de-
8 velop positive attitudes toward science and are more
9 likely to pursue STEM expertise and careers later
10 on, the majority of current research focuses on in-
11 creasing STEM opportunities for middle-school-aged
12 children and older.

13 (3) Women remain widely underrepresented in
14 the STEM workforce, and this gender disparity ex-
15 tends down through all levels of education.

16 **SEC. 3. SUPPORTING EARLY CHILDHOOD STEM EDUCATION**
17 **RESEARCH.**

18 In awarding grants under the Discovery Research
19 PreK–12 program, the Director of the National Science
20 Foundation shall consider the age distribution of a STEM
21 education research and development project to improve the
22 focus of research and development on early childhood edu-
23 cation.

1 **SEC. 4. SUPPORTING FEMALE STUDENTS IN PREKINDER-**
2 **GARTEN THROUGH ELEMENTARY SCHOOL IN**
3 **STEM EDUCATION.**

4 Section 305(d) of the American Innovation and Com-
5 petitiveness Act (42 U.S.C. 1862s-5(d)) is amended by
6 adding at the end the following:

7 “(3) RESEARCH.—As a component of improving
8 participation of women in STEM fields, research
9 funded by a grant under this subsection may include
10 research on—

11 “(A) the role of teacher training and pro-
12 fessional development, including effective incen-
13 tive structures to encourage teachers to partici-
14 pate in such training and professional develop-
15 ment, in encouraging or discouraging female
16 students in prekindergarten through elementary
17 school from participating in STEM activities;

18 “(B) the role of teachers in shaping per-
19 ceptions of STEM in female students in pre-
20 kindergarten through elementary school and
21 discouraging such students from participating
22 in STEM activities;

23 “(C) the role of other facets of the learn-
24 ing environment on the willingness of female
25 students in prekindergarten through elementary
26 school to participate in STEM activities, includ-

1 ing learning materials and textbooks, classroom
2 decorations, seating arrangements, use of media
3 and technology, classroom culture, and gender
4 composition of students during group work;

5 “(D) the role of parents and other care-
6 givers in encouraging or discouraging female
7 students in prekindergarten through elementary
8 school from participating in STEM activities;

9 “(E) the types of STEM activities that en-
10 courage greater participation by female stu-
11 dents in prekindergarten through elementary
12 school;

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 the perception
17 of and participation in STEM activities of fe-
18 male students in prekindergarten through ele-
19 mentary school; and

20 “(H) any other area the Director deter-
21 mines will carry out the goal described in para-
22 graph (1).”.

1 **SEC. 5. SUPPORTING FEMALE STUDENTS IN PREKINDER-**
2 **GARTEN THROUGH ELEMENTARY SCHOOL IN**
3 **COMPUTER SCIENCE EDUCATION.**

4 Section 310(b) of the American Innovation and Com-
5 petitiveness Act (42 U.S.C. 1862s-7(b)) is amended by
6 adding at the end the following:

7 “(3) USES OF FUNDS.—The tools and models
8 described in paragraph (2)(C) may include—

9 “(A) offering training and professional de-
10 velopment programs, including summer or aca-
11 demic year institutes or workshops, designed to
12 strengthen the capabilities of prekindergarten
13 and elementary school teachers and to famil-
14 iarize such teachers with the role of gender bias
15 in the classroom;

16 “(B) offering innovative pre-service and in-
17 service programs that instruct teachers on gen-
18 der-inclusive practices for teaching computing
19 concepts;

20 “(C) developing distance learning pro-
21 grams for teachers or students, including devel-
22 oping curricular materials, play-based com-
23 puting activities, and other resources for the in-
24 service professional development of teachers
25 that are made available to teachers through the
26 Internet;

1 “(D) developing or adapting prekindergarten and elementary school computer science
2 curricular materials that incorporate contemporary research on the science of learning, particularly with respect to gender inclusion;

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

5 “(F) providing mentors for female students in prekindergarten through elementary school
6 in person and through the Internet to support such students in participating in computer
7 science activities;

8 “(G) engaging female students in prekindergarten through elementary school and
9 their guardians about the difficulties faced by such students to maintain an interest in participating in computer science activities;

10 “(H) acquainting female students in prekindergarten through elementary school with
11 careers in computer science and encouraging such students to consider careers in such field;

12 “(I) developing tools to evaluate activities conducted under this subsection; and

1 “(J) any other tools or models the Director
2 determines will accomplish the aim described in
3 paragraph (2)(C).”.

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