

116TH CONGRESS  
1ST SESSION

# S. 737

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

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## IN THE SENATE OF THE UNITED STATES

MARCH 11, 2019

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

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## 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”.

6       **SEC. 2. FINDINGS.**

7       Congress finds the following:

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

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

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

14 **SEC. 3. SUPPORTING EARLY CHILDHOOD STEM EDUCATION**  
15 **RESEARCH.**

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

ing 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 female students in prekindergarten through elementary school from participating in STEM activities;

“(E) the types of STEM activities that encourage greater participation by female students in prekindergarten through elementary school;

“(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 the perception of and participation in STEM activities of female students in prekindergarten through elementary school; and

“(H) any other area the Director determines will carry out the goal described in paragraph (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 curricular materials that incorporate contemporary research on the science of learning, particularly with respect to gender inclusion;

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

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

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

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

24          “(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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