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

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A BILL

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

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

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

SEC. 2. FINDINGS.

Congress finds the following:

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

(2) While 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, the majority of current research focuses on increasing STEM opportunities for middle-school-aged children and older.

(3) Women remain widely underrepresented in the STEM workforce, and this gender disparity extends down through all levels of education.

SEC. 3. SUPPORTING EARLY CHILDHOOD STEM EDUCATION RESEARCH.

In awarding grants under the Discovery Research PreK–12 program, the Director of the National Science Foundation shall consider the age distribution of a STEM education research and development project to improve the focus of research and development on early childhood education.

SEC. 4. SUPPORTING FEMALE STUDENTS IN PREKINDERGARTEN THROUGH ELEMENTARY SCHOOL IN STEM EDUCATION.

Section 305(d) of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–5(d)) is amended by adding at the end the following:

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

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

''(B) the role of teachers in shaping perceptions of STEM in female students in prekindergarten through elementary school and discouraging such students from participating in STEM activities;

''(C) the role of other facets of the learning environment on the willingness of female students in prekindergarten through elementary 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).''.

SEC. 5. SUPPORTING FEMALE STUDENTS IN PREKINDERGARTEN THROUGH ELEMENTARY SCHOOL IN COMPUTER SCIENCE EDUCATION.

Section 310(b) of the American Innovation and Competitiveness Act (42 U.S.C. 1862s–7(b)) is amended by adding at the end the following:

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

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

''(B) offering innovative pre-service 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 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;

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

''(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;

''(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;

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

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

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

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