

115TH CONGRESS  
1ST SESSION

# S. 1968

To direct the National Science Foundation to award grants to encourage young girls to participate in computer science and other STEM activities, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

OCTOBER 17, 2017

Ms. CORTEZ MASTO (for herself and Mrs. CAPITO) 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 award grants to encourage young girls to participate in computer science and other STEM activities, and for other purposes.

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 “Code Like a Girl Act”.

5 **SEC. 2. FINDINGS.**

6 The Congress finds the following:

7 (1) Growth in the STEM workforce is domi-  
8 nated by new computing jobs, and the Nation needs

1 to leverage all of its human capital to meet the de-  
2 mand. The Bureau of Labor Statistics projects that,  
3 of all the new STEM occupations created from 2014  
4 to 2024, nearly  $\frac{2}{3}$  will be computing jobs.

5 (2) More work is needed to ensure women are  
6 equally represented in the computer science work-  
7 force. According to the Bureau of Labor Statistics,  
8 in 2016, women held more than 51 percent of all  
9 professional occupations in the United States, but  
10 only 26 percent of the computing-related occupa-  
11 tions. This is compared with the all-time peak of 26  
12 percent of the computing-related occupations in  
13 1991.

14 (3) The gender disparity in computer science  
15 extends down through all levels of education. In  
16 2016, only 23 percent of AP Computer Science  
17 exam takers were female. The number of computer  
18 science degrees awarded to women has steadily de-  
19 clined for bachelor's degree earners from 29 percent  
20 in 1995 to just 18 percent in 2014.

21 (4) A 2010 study funded by the National  
22 Science Foundation found that a majority of both  
23 women and men scientists and Ph.D. students be-  
24 came interested in science before middle school.  
25 Women scientists in this study were more likely than

1 men to mention teachers as the source of their ini-  
2 tial interest in science, substantiating the need for  
3 teachers to engage young girls in the classroom.

4 (5) Gender disparities are also observed at the  
5 earliest levels of education. Studies have shown that,  
6 at around 6 years old, girls develop the belief that  
7 brilliance is a male characteristic. This negative  
8 stereotype, once adopted, is shown to have an imme-  
9 diate effect, as girls start to lose interest in activities  
10 they perceive as requiring brilliance.

11 (6) Research into the cause of the early adop-  
12 tion of this stereotype is limited, but implicit biases  
13 held by teachers have been shown to have a negative  
14 impact on girls' academic achievement in math and  
15 science and on their future decisions to enroll in ad-  
16 vanced courses in these subjects.

17 (7) While significant work is being done to ex-  
18 pand access to high-quality computer science edu-  
19 cation for female students at the secondary and  
20 postsecondary level, there are few research funding  
21 opportunities focused exclusively on girls in early  
22 childhood education.

23 (8) Despite the limited attention being paid to  
24 this age group, research has shown that interven-  
25 tions with girls at an early age can reduce the nega-

1        tive impact of gendered stereotypes. Scientists have  
2        found that positive experiences with robotics and  
3        computing lead to greater interest and self-con-  
4        fidence among girls, even after gender stereotypes  
5        about computing have been adopted.

6 **SEC. 3. DEFINITIONS.**

7        In this Act:

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

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

14          (3) LOCAL EDUCATIONAL AGENCY.—The term  
15        “local educational agency” has the meaning given  
16        the term in section 8101 of the Elementary and Sec-  
17        ondary Education Act of 1965 (20 U.S.C. 7801), ex-  
18        cept that such term also includes preschools, after-  
19        school programs, and summer programs.

20          (4) STEM.—The term “STEM” means science,  
21        technology, engineering, and mathematics, including  
22        computer science.

23          (5) YOUNG GIRLS.—The term “young girls”  
24        means female individuals who have not attained the  
25        age of 11.

1 **SEC. 4. RESEARCH GRANTS.**

2 (a) IN GENERAL.—The Director shall award grants  
3 on a competitive basis to institutions of higher education,  
4 local educational agencies, or nonprofit organizations (or  
5 consortia of such institutions, agencies, or organizations),  
6 to accelerate research efforts to increase understanding of  
7 the factors that contribute to the willingness or unwilling-  
8 ness of young girls to participate in STEM activities.

9 (b) RESEARCH AREAS.—Research areas funded by a  
10 grant under this section may include—

11 (1) the role of teacher training and professional  
12 development, including effective incentive structures  
13 to encourage teachers to participate in such training  
14 and professional development, in encouraging or dis-  
15 couraging young girls from participating in STEM  
16 activities;

17 (2) the role of implicit bias in the classroom in  
18 shaping young girls' perceptions of STEM and dis-  
19 couraging such girls from participating in STEM ac-  
20 tivities;

21 (3) the role of other facets of the learning envi-  
22 ronment on the willingness of young girls to partici-  
23 pate in STEM activities, including learning mate-  
24 rials and textbooks, classroom decorations, seating  
25 arrangements, use of media and technology, class-

1 room culture, and gender composition of students  
2 during group work;

3 (4) the role of parents and other caregivers in  
4 encouraging or discouraging young girls from par-  
5 ticipating in STEM activities;

6 (5) the types of STEM activities that encourage  
7 greater participation by young girls; and

8 (6) any other activity the Director determines  
9 will accomplish the goals of this section.

10 (c) GRANT RECIPIENT REPORT.—An entity awarded  
11 a grant under this section shall report to the Director,  
12 at such time and in such manner as the Director may re-  
13 quire, on the activities carried out and materials developed  
14 using such grant funds.

15 **SEC. 5. DEVELOPMENT AND TESTING OF SCALABLE MOD-**  
16 **ELS FOR INCREASED ENGAGEMENT.**

17 (a) IN GENERAL.—The Director shall award grants  
18 on a competitive basis, to institutions of higher education  
19 or nonprofit organizations (or consortia of such institu-  
20 tions or organizations), to develop and evaluate interven-  
21 tions in pre-K and elementary school classrooms that seek  
22 to increase participation of young girls in computer  
23 science activities.

24 (b) PARTNERSHIPS.—In order to be eligible to receive  
25 a grant under this section, an institution of higher edu-

1 cation, nonprofit organization, or consortium shall enter  
2 into a partnership with one or more local educational  
3 agencies in carrying out the activities funded by such  
4 grant.

5 (c) USES OF FUNDS.—Grants awarded under this  
6 section shall be used for activities that draw upon the ex-  
7 pertise of the partner entities described in subsection (b)  
8 to increase participation of young girls in computer  
9 science activities, including—

10 (1) offering training and professional develop-  
11 ment programs, including summer or academic year  
12 institutes or workshops, designed to strengthen the  
13 capabilities of pre-K and elementary school teachers  
14 and to familiarize such teachers with the role of gen-  
15 der bias in the classroom;

16 (2) offering innovative pre-service and in-service  
17 programs that instruct teachers on gender-inclusive  
18 practices for teaching computing concepts;

19 (3) developing distance learning programs for  
20 teachers or students, including developing curricular  
21 materials, play-based computing activities, and other  
22 resources for the in-service professional development  
23 of teachers that are made available to teachers  
24 through the internet;

1           (4) developing a cadre of master teachers who  
2 will promote reform and the adoption of gender-in-  
3 clusive practices in teaching computer science con-  
4 cepts in early childhood education;

5           (5) developing tools to evaluate activities con-  
6 ducted under this section;

7           (6) developing or adapting pre-K and elemen-  
8 tary school computer science curricular materials  
9 that incorporate contemporary research on the  
10 science of learning, particularly with respect to gen-  
11 der inclusion;

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

15          (8) providing mentors for girls in person and  
16 through the internet to support such girls in partici-  
17 pating in computer science activities;

18          (9) educating the parents of girls about the dif-  
19 ficulties faced by girls to maintain an interest and  
20 desire to participate in computer science activities,  
21 and enlisting the help of parents in overcoming these  
22 difficulties;

23          (10) acquainting girls with careers in computer  
24 science and encouraging girls to consider careers in  
25 such field; and



1           (11) any other activities the Director deter-  
2           mines will accomplish the goals of this section.

3           (d) GRANT RECIPIENT REPORT.—An entity awarded  
4 a grant under this section shall report to the Director,  
5 at such time and in such manner as the Director may re-  
6 quire, on the activities carried out and materials developed  
7 using such grant funds.

8           (e) EVALUATION REQUIRED.—Not later than 4 years  
9 after the date of enactment of this Act, and every 3 years  
10 thereafter, the Director shall evaluate the grant program  
11 under this section. At a minimum, such evaluation shall—

12           (1) use a common set of benchmarks and as-  
13           sessment tools to identify best practices and mate-  
14           rials developed and demonstrated by the partner-  
15           ships described in subsection (b); and

16           (2) to the extent practicable, compare the effec-  
17           tiveness of practices and materials developed and  
18           demonstrated by such partnerships with those of  
19           partnerships funded by other local or State govern-  
20           ment or Federal Government programs.

21           (f) DISSEMINATION OF RESULTS.—

22           (1) EVALUATION RESULTS.—The Director shall  
23           make publicly available free of charge on an internet  
24           website and shall submit to Congress the results of  
25           the evaluation required under subsection (e).

1           (2) MATERIALS.—The Director shall ensure  
2           that materials developed under a program funded by  
3           a grant under this section, that are demonstrated to  
4           be effective in achieving the goals of this section (as  
5           determined by the Director), are made publicly avail-  
6           able free of charge on an internet website, including  
7           through an arrangement with an outside entity.

8           (g) ANNUAL MEETING.—The Director shall convene  
9           an annual meeting of the partnerships participating in a  
10          program funded by a grant under this section, for the pur-  
11          pose of fostering greater national collaboration.

12          (h) TECHNICAL ASSISTANCE.—At the request of a  
13          partnership seeking a grant under this section, the Direc-  
14          tor shall provide the partnership with technical assistance  
15          in meeting any requirement of this section, including pro-  
16          viding advice from experts on how to develop a quality ap-  
17          plication for such a grant.

18          **SEC. 6. REPORTING REQUIREMENTS.**

19          (a) ANNUAL REPORT.—The Director shall submit to  
20          Congress an annual report on the grant programs estab-  
21          lished by sections 4 and 5.

22          (b) REPORT ON PROGRAM EXPANSION.—Not later  
23          than 4 years after the first grant is awarded under the  
24          grant programs established by sections 4 and 5, the Direc-  
25          tor shall submit to Congress a report, based on an analysis

1 of the grant recipient reports submitted to the Director  
2 pursuant to sections 4(c) and 5(d), that includes a rec-  
3 ommendation for how to expand such grant programs.

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