

115TH CONGRESS  
1ST SESSION

# H. R. 3316

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 HOUSE OF REPRESENTATIVES

JULY 19, 2017

Ms. ROSEN (for herself, Ms. STEFANIK, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. EVANS, Mr. MEEKS, Ms. NORTON, Mr. TONKO, Mr. BEYER, Ms. HANABUSA, Mr. CRIST, and Mrs. MURPHY of Florida) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on Education and the Workforce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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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”.

1 **SEC. 2. FINDINGS.**

2 The Congress finds the following:

3 (1) Growth in the STEM workforce is domi-  
4 nated by new computing jobs, and the Nation needs  
5 to leverage all of its human capital to meet the de-  
6 mand. The Bureau of Labor Statistics projects that,  
7 of all the new STEM occupations created from 2014  
8 to 2024, nearly two-thirds will be computing jobs.

9 (2) More work is needed to ensure women are  
10 equally represented in the computer science work-  
11 force. According to the Bureau of Labor Statistics,  
12 in 2016, women held more than 51 percent of all  
13 professional occupations in the United States, but  
14 only 26 percent of the computing-related occupa-  
15 tions. This is compared with the all-time peak of 26  
16 percent of the computing-related occupations in  
17 1991.

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

25 (4) A 2010 study funded by the National  
26 Science Foundation found that a majority of both

1 women and men scientists and Ph.D. students be-  
2 came interested in science before middle school.  
3 Women scientists in this study were more likely than  
4 men to mention teachers as the source of their ini-  
5 tial interest in science, substantiating the need for  
6 teachers to engage young girls in the classroom.

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

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

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

1           (8) Despite the limited attention being paid to  
2 this age group, research has shown that interven-  
3 tions with girls at an early age can reduce the nega-  
4 tive impact of gendered stereotypes. Scientists have  
5 found that positive experiences with robotics and  
6 computing lead to greater interest and self-con-  
7 fidence among girls, even after gender stereotypes  
8 about computing have been adopted.

9 **SEC. 3. DEFINITIONS.**

10 In this Act:

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

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

17           (3) **LOCAL EDUCATIONAL AGENCY.**—The term  
18 “local educational agency” has the meaning given  
19 the term in section 8101(a) of the Elementary and  
20 Secondary Education Act of 1965 (20 U.S.C.  
21 7801(a)), except that such term also includes  
22 preschools, after-school programs, and summer pro-  
23 grams.

1           (4) STEM.—The term “STEM” means science,  
2           technology, engineering, and mathematics, including  
3           computer science.

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

7   **SEC. 4. RESEARCH GRANTS.**

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

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

17                 (1) the role of teacher training and professional  
18                 development, including effective incentive structures  
19                 to encourage teachers to participate in such training  
20                 and professional development, in encouraging or dis-  
21                 couraging young girls from participating in STEM  
22                 activities;

23                 (2) the role of implicit bias in the classroom in  
24                 shaping young girls’ perceptions of STEM and dis-

1       encouraging such girls from participating in STEM ac-  
2       tivities;

3           (3) the role of other facets of the learning envi-  
4       ronment on the willingness of young girls to partici-  
5       pate in STEM activities, including learning mate-  
6       rials and textbooks, classroom decorations, seating  
7       arrangements, use of media and technology, class-  
8       room culture, and gender composition of students  
9       during group work;

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

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

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

17       (c) **GRANT RECIPIENT REPORT.**—An entity awarded  
18   a grant under this section shall report to the Director,  
19   at such time and in such manner as the Director may re-  
20   quire, on the activities carried out and materials developed  
21   using such grant funds.

22   **SEC. 5. DEVELOPMENT AND TESTING OF SCALABLE MOD-**  
23                   **ELS FOR INCREASED ENGAGEMENT.**

24       (a) **IN GENERAL.**—The Director shall award grants  
25   on a competitive basis, to institutions of higher education

1 or nonprofit organizations (or consortia of such institu-  
2 tions or organizations), to develop and evaluate interven-  
3 tions in pre-K and elementary school classrooms that seek  
4 to increase participation of young girls in computer  
5 science activities.

6 (b) PARTNERSHIPS.—In order to be eligible to receive  
7 a grant under this section, an institute of higher edu-  
8 cation, nonprofit organization, or consortium, shall enter  
9 into a partnership with one or more local educational  
10 agency in carrying out the activities funded by such grant.

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

16 (1) offering training and professional develop-  
17 ment programs, including summer or academic year  
18 institutes or workshops, designed to strengthen the  
19 capabilities of pre-K and elementary school teachers  
20 and to familiarize such teachers with the role of gen-  
21 der bias in the classroom;

22 (2) offering innovative preservice and in-service  
23 programs that instruct teachers on gender-inclusive  
24 practices for teaching computing concepts;

1           (3) developing distance learning programs for  
2 teachers or students, including developing curricular  
3 materials, play-based computing activities, and other  
4 resources for the in-service professional development  
5 of teachers that are made available to teachers  
6 through the Internet;

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

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

13           (6) developing or adapting pre-K and elemen-  
14 tary school computer science curricular materials  
15 that incorporate contemporary research on the  
16 science of learning, particularly with respect to gen-  
17 der inclusion;

18           (7) developing and offering gender-inclusive  
19 computer science enrichment programs for students,  
20 including after-school and summer programs;

21           (8) providing mentors for girls in person and  
22 through the Internet to support such girls in partici-  
23 pating in computer science activities;

24           (9) educating the parents of girls about the dif-  
25 ficulties faced by girls to maintain an interest and

1 desire to participate in computer science activities,  
2 and enlisting the help of parents in overcoming these  
3 difficulties;

4 (10) acquainting girls with careers in computer  
5 science and encouraging girls to consider careers in  
6 such field; and

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

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

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

18 (1) use a common set of benchmarks and as-  
19 sessment tools to identify best practices and mate-  
20 rials developed and demonstrated by the partner-  
21 ships described in subsection (b); and

22 (2) to the extent practicable, compare the effec-  
23 tiveness of practices and materials developed and  
24 demonstrated by such partnerships with those of

1 partnerships funded by other local or State govern-  
2 ment or Federal Government programs.

3 (f) DISSEMINATION OF RESULTS.—

4 (1) EVALUATION RESULTS.—The Director shall  
5 make publicly available free of charge on an Internet  
6 website and shall submit to Congress the results of  
7 the evaluation required under subsection (e).

8 (2) MATERIALS.—The Director shall ensure  
9 that materials developed under a program funded by  
10 a grant under this section, that are demonstrated to  
11 be effective in achieving the goals of this section (as  
12 determined by the Director), are made publicly avail-  
13 able free of charge on an Internet website, including  
14 through an arrangement with an outside entity.

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

19 (h) TECHNICAL ASSISTANCE.—At the request of a  
20 partnership seeking a grant under this section, the Direc-  
21 tor shall provide the partnership with technical assistance  
22 in meeting any requirement of this section, including pro-  
23 viding advice from experts on how to develop a quality ap-  
24 plication for such a grant.

1 **SEC. 6. REPORTING REQUIREMENTS.**

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

5 (b) REPORT ON PROGRAM EXPANSION.—Not less  
6 than 4 years after the first grant is awarded under the  
7 grant programs established by sections 4 and 5, the Direc-  
8 tor shall submit to Congress a report, based on an analysis  
9 of the grant recipient reports submitted to the Director  
10 pursuant to sections 4(c) and 5(d), that includes a rec-  
11 ommendation for how to expand such grant programs.

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