

116TH CONGRESS
1ST SESSION

H. R. 1485

To authorize the Secretary of Education to carry out a program to increase access to prekindergarten through grade 12 computer science education.

IN THE HOUSE OF REPRESENTATIVES

MARCH 4, 2019

Ms. LEE of California (for herself, Ms. DELBENE, Ms. ROYBAL-ALLARD, Ms. JOHNSON of Texas, Mr. CISNEROS, Ms. CLARKE of New York, Ms. WILSON of Florida, Ms. HILL of California, Mrs. WATSON COLEMAN, Ms. JACKSON LEE, Mr. BUTTERFIELD, Ms. KELLY of Illinois, Ms. TITUS, Mr. GRJALVA, and Mr. GARCÍA of Illinois) introduced the following bill; which was referred to the Committee on Education and Labor

A BILL

To authorize the Secretary of Education to carry out a program to increase access to prekindergarten through grade 12 computer science education.

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 “Computer Science for
5 All Act of 2019”.

6 **SEC. 2. FINDINGS.**

7 Congress finds that:

1 (1) Computer science is transforming industry,
2 creating new fields of commerce, driving innovation,
3 and bolstering productivity. It is projected that com-
4 puting will make up $\frac{2}{3}$ of new science and engineer-
5 ing jobs.

6 (2) However, the more than 500,000 computing
7 jobs unfilled in the United States suggests that our
8 students are not being prepared to meet the de-
9 mands of a 21st century economy. It is projected
10 that there will be 1,400,000 new jobs in the tech-
11 nology sector by 2020; however, 70 percent of those
12 jobs will be unfulfilled at the rate American univer-
13 sities are producing qualified graduates.

14 (3) Knowledge of computer science and use of
15 technology is increasingly essential for all individ-
16 uals, not just those working or planning to work in
17 the technology sector.

18 (4) Providing students with computer science
19 education in elementary school and secondary school
20 is critical for student success, and strengthening the
21 workforce of a 21st century economy.

22 (5) While an estimated 90 percent of parents
23 want computer science taught in their children's
24 schools, just 25 percent of all elementary schools
25 and secondary schools offer high-quality computer

1 science instruction that includes programming and
2 coding.

3 (6) Black and Hispanic workers in the science
4 and engineering workforce continue to be underrep-
5 resented. Black employees represent 11 percent of
6 the U.S. workforce, but only 9 percent of the science
7 and engineering workforce. Hispanic employees rep-
8 resent 16 percent of the U.S. workforce, but only 7
9 percent of the science and engineering workforce.

10 (7) While underrepresented minority students
11 overall face an opportunity gap in STEAM edu-
12 cation, women of color particularly face an achieve-
13 ment gap in science and engineering education. In
14 2015, while women were conferred nearly a third of
15 all science and engineering degrees, women of color
16 received only 13 percent (Black: 3.2 percent; His-
17 panic: 3.9 percent; Native American or Alaskan Na-
18 tive: 0.2 percent; Asian or Pacific Islander: 4.5 per-
19 cent; and multi-racial: 1.2 percent).

20 (8) Women overall face challenges in accessing
21 computer science education. Only 18 percent of all
22 bachelor's degrees conferred in computer science
23 went to women in 2015, and women of color received
24 only 9 percent of degrees (Black: 3 percent; His-
25 panic: 2 percent; Native American or Alaska Native:

1 0.8 percent; and Asian or Pacific islander: 3 per-
2 cent).

3 (9) Disparities in enrollment and academic
4 achievement start early. In 2018, only 28 percent of
5 students taking either AP Computer Science exams
6 were women, and just 21 percent were African
7 American, or Latino.

8 (10) Nationwide, only 88 Native American stu-
9 dents took the AP Computer Science exam in 2016,
10 a decrease from 2015. This means that while Native
11 Americans make up about 1.1 percent of the U.S.
12 student population, they made up $\frac{1}{5}$ of a percent of
13 students who took AP Computer Science exams in
14 2016.

15 **SEC. 3. DEFINITIONS.**

16 In this Act:

17 (1) COMPUTATIONAL THINKING.—The term
18 “computational thinking” aims to capture the wide
19 range of creative processes that go into formulating
20 problems and their solutions in such a way that the
21 solutions can be carried out by a computer, and may
22 involve some understanding of software and hard-
23 ware design, logic and the use of abstraction and
24 representation, algorithm design, algorithm expres-
25 sion, problem decomposition, modularity, program-

1 ming paradigms and languages, issues of informa-
2 tion security and privacy, the application of com-
3 putation across a wide range of disciplines, and the
4 societal impact of computing. Programming is a
5 hands-on, inquiry-based way in which computational
6 thinking may be learned.

7 (2) COMPUTER SCIENCE EDUCATION.—The
8 term “computer science education” includes any of
9 the following: computational thinking; software de-
10 sign; hardware architecture and organization; theo-
11 retical foundations; use of abstraction and represen-
12 tation in problem solving; logic; algorithm design
13 and implementation; the limits of computation; pro-
14 gramming paradigms and languages; parallel and
15 distributed computing; information security and pri-
16 vacy; computing systems and networks; graphics and
17 visualization; databases and information retrieval;
18 the relationship between computing and mathe-
19 matics; artificial intelligence; applications of com-
20 puting across a broad range of disciplines and prob-
21 lems; and the social impacts and professional prac-
22 tices of computing.

23 (3) ELIGIBLE TRIBAL SCHOOL.—The term “eli-
24 gible Tribal school” means—

1 (A) a school operated by the Bureau of In-
2 dian Education;

3 (B) a school operated pursuant to the In-
4 dian Self-Determination and Education Assist-
5 ance Act (25 U.S.C. 450 et seq.); or

6 (C) a tribally controlled school (as defined
7 in section 5212 of the Tribally Controlled
8 Schools Act of 1988 (25 U.S.C. 2511)).

9 (4) INSTITUTION OF HIGHER EDUCATION.—The
10 term “institution of higher education” has the
11 meaning given the term in section 102 of the Higher
12 Education Act of 1965 (20 U.S.C. 1002).

13 (5) LOCAL EDUCATIONAL AGENCY.—The term
14 “local educational agency” has the meaning given
15 the term in section 8101 of the Elementary and Sec-
16 ondary Education Act of 1965 (20 U.S.C. 8101).

17 (6) POVERTY LINE.—The term “poverty line”
18 has the meaning given the term in section 8101 of
19 the Elementary and Secondary Education Act of
20 1965 (20 U.S.C. 8101).

21 (7) SECRETARY.—The term “Secretary” means
22 the Secretary of Education.

23 (8) STEAM.—The term “STEAM” means the
24 subjects of science, technology, engineering, arts,
25 and mathematics, including computer science.

1 **SEC. 4. GRANTS TO STATES, LOCAL EDUCATIONAL AGEN-**
2 **CIES, AND ELIGIBLE TRIBAL SCHOOLS.**

3 (a) GRANTS TO STATES, LOCAL EDUCATIONAL
4 AGENCIES, AND ELIGIBLE TRIBAL SCHOOLS.—

5 (1) IN GENERAL.—The Secretary shall award
6 grants to States, local educational agencies, and eli-
7 gible Tribal schools—

8 (A) that demonstrate an ability to carry
9 out an ambitious computer science education
10 expansion effort for all students served by the
11 State, agency, or school, including traditionally
12 underrepresented students; and

13 (B) to serve as models for national replica-
14 tion of computer science education expansion
15 efforts.

16 (2) CONSORTIA AND PARTNERSHIPS.—A State,
17 local educational agency, or eligible Tribal school
18 may apply for a grant under this section as part of
19 a consortium or in partnership with a State edu-
20 cational agency or other partner.

21 (3) DURATION.—Grants awarded under this
22 section shall be for a period of not more than 5
23 years.

24 (b) APPLICATION REQUIREMENTS.—A State, local
25 educational agency, or eligible Tribal school that desires
26 a grant under this section shall submit an application to

1 the Secretary at such time, in such manner, and con-
2 taining such information as the Secretary may require, in-
3 cluding, at a minimum, plans for the following:

4 (1) Every high school student served by the
5 State, local educational agency, or eligible Tribal
6 school to have access to computer science education
7 not later than 5 years after receipt of grant funds.

8 (2) All students served by the State, local edu-
9 cational agency, or eligible Tribal school to have ac-
10 cess to a progression of computer science education
11 from prekindergarten through middle school that
12 prepares students for high school computer science
13 education.

14 (3) Expansion of overall access to rigorous
15 STEAM classes, utilizing computer science as a cat-
16 alyst for increased interest in STEAM more broadly,
17 and reducing the enrollment and academic achieve-
18 ment gap for underrepresented groups such as mi-
19 norities, girls, and youth from families living at, or
20 below, the poverty line.

21 (4) Continuous monitoring and evaluation of
22 project activities.

23 (5) Effectively sustaining project activities after
24 the grant period ends, and the length of time which
25 the applicant plans to sustain the project activities.

1 (c) USE OF GRANT FUNDS.—

2 (1) REQUIRED ACTIVITIES.—A State, local edu-
3 cational agency, or eligible Tribal school that re-
4 ceives a grant under this section shall use the grant
5 funds for the following activities:

6 (A) Training teachers to teach computer
7 science.

8 (B) Expanding access to high-quality
9 learning materials and online learning options.

10 (C) Creating plans for expanding overall
11 access to rigorous STEAM classes, utilizing
12 computer science as a catalyst for increased in-
13 terest in STEAM more broadly, and reducing
14 course equity gaps for all students, including
15 underrepresented groups such as minorities,
16 girls, and youth from low-income families.

17 (D) Ensuring additional support and re-
18 sources, which may include mentoring for stu-
19 dents traditionally underrepresented in STEAM
20 fields.

21 (2) PERMISSIBLE ACTIVITIES.—A State, local
22 educational agency, or eligible Tribal school that re-
23 ceives a grant under this section may use the grant
24 funds for the following activities:

1 (A) Building effective regional collabora-
2 tions with industry, nonprofit organizations, 2-
3 year and 4-year degree granting institutions of
4 higher education (including community colleges,
5 Historically Black Colleges and Universities,
6 Hispanic-serving institutions, Asian American
7 and Native American Pacific Islander-serving
8 institutions, American Indian Tribally con-
9 trolled colleges and universities, Alaska Native
10 and Native Hawaiian-serving institutions, Pre-
11 dominantly Black Institutions, Native Amer-
12 ican-serving, Nontribal institutions, and other
13 minority-serving institutions), and out-of-school
14 providers.

15 (B) Recruiting and hiring instructional
16 personnel as needed, including curriculum spe-
17 cialists.

18 (C) Preparations for effectively sustaining
19 project activities after the grant period ends.

20 (D) Disseminating information about effec-
21 tive practices.

22 (3) LIMITATION.—Not more than 15 percent of
23 a grant may be used to purchase equipment.

24 (d) NATIONAL ACTIVITIES.—The Secretary may re-
25 serve not more than 2.5 percent of funds available for

1 grants under this section for national activities, including
2 technical assistance, evaluation, and dissemination.

3 (e) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated to carry out this section
5 a total of \$250,000,000 for fiscal year 2020 and the suc-
6 ceeding 4 fiscal years.

7 **SEC. 5. REPORTING REQUIREMENTS.**

8 (a) GRANTEE REPORTS.—Each State, local edu-
9 cational agency, and eligible Tribal school that receives a
10 grant under this Act shall submit to the Secretary a re-
11 port, not less than twice a year during the grant period,
12 on the use of grant funds that shall include data on the
13 numbers of students served through activities funded
14 under this Act, disaggregated by race (for Asian and Na-
15 tive Hawaiian or Pacific Islander students using the same
16 race response categories as the decennial census of the
17 population), ethnicity, gender, and eligibility to receive a
18 free or reduced price lunch under the Richard B. Russell
19 National School Lunch Act (42 U.S.C. 1751 et seq.).

20 (b) REPORT BY THE SECRETARY.—Not later than 5
21 years after the first grant is awarded under this Act, the
22 Secretary shall submit to Congress a report based on the
23 analysis of reports received under subsection (a) with a

- 1 recommendation on how to expand the program under this
- 2 Act.

