

118TH CONGRESS
1ST SESSION

H. R. 4174

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

JUNE 15, 2023

Ms. LEE of California (for herself, Mr. FLEISCHMANN, Mr. BOWMAN, Mr. LARSON of Connecticut, Ms. DELBENE, Mr. EVANS, Ms. CHU, Ms. KELLY of Illinois, Mr. JOHNSON of Georgia, and Ms. CASTOR of Florida) introduced the following bill; which was referred to the Committee on Education and the Workforce

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 2023”.

6 **SEC. 2. FINDINGS.**

7 Congress finds the following:

1 (1) Computer science is transforming industry,
2 creating new fields of commerce, driving innovation,
3 and bolstering productivity. By 2029, computer
4 science and information jobs are expected to grow by
5 11 percent, faster than the average of any other oc-
6 cupation.

7 (2) However, as of 2019, the more than
8 900,000 computing and tech jobs unfilled in the
9 United States suggests that our students are not
10 being prepared to meet the demands of a 21st cen-
11 tury economy. It is projected that there will be
12 8,000,000 new jobs in the technology sector by 2028
13 and 3,500,000 computing-related jobs by 2026, how-
14 ever, the current state of computer science education
15 will only prepare enough computer science profes-
16 sionals to fill 19 percent of these jobs.

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

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

1 (5) While an estimated 90 percent of parents
2 want computer science taught in their children’s
3 schools, just 45 percent of all elementary schools
4 and secondary schools offer high-quality computer
5 science instruction that includes programming and
6 coding.

7 (6) Black and Hispanic workers in the science
8 and engineering workforce continue to be underrep-
9 resented. Black employees represent 13 percent of
10 the United States workforce, but only 5.6 percent of
11 the science and engineering workforce. Hispanic em-
12 ployees represent 17 percent of the United States
13 workforce, but only 7.5 percent of the science and
14 engineering workforce.

15 (7) While underrepresented minority students
16 overall face an opportunity gap in STEAM edu-
17 cation, women of color particularly face an achieve-
18 ment gap in science and engineering education. In
19 2019, while women were conferred nearly a third of
20 all science and engineering degrees, women of color
21 received only 13 percent (Black: 3.2 percent; His-
22 panic: 3.9 percent; Native American or Alaskan Na-
23 tive: 0.2 percent; Asian or Pacific Islander: 4.5 per-
24 cent; and multiracial: 1.2 percent).

1 (8) In 2018, of all engineering technologies and
2 engineering-related bachelor level-related studies,
3 only 3 percent of nationwide enrollment was rep-
4 resented by Black students, while just 10 percent
5 were represented by Hispanic students.

6 (9) Women overall face challenges in accessing
7 computer science education. Only 18 percent of all
8 bachelor's degrees conferred in computer science
9 went to women in 2015, and women of color received
10 only 9 percent of degrees (Black: 3 percent; His-
11 panic: 2 percent; Native American or Alaska Native:
12 0.8 percent; and Asian or Pacific islander: 3 per-
13 cent).

14 (10) Disparities in enrollment and academic
15 achievement start early. In 2019, only 24 percent of
16 students taking either AP Computer Science exams
17 were women, and just 16 percent were African
18 American, Latino, or Native Hawaiian/other Pacific
19 Islander.

20 (11) Nationwide, only 88 Native American stu-
21 dents took the AP Computer Science exam in 2016,
22 a decrease from 2015. This means that while Native
23 Americans make up about 1.1 percent of the United
24 States student population, they made up 1/5 of a

1 percent of students who took AP Computer Science
2 exams in 2016.

3 (12) In 2019, just 18 percent of the Depart-
4 ment of Education discretionary and research grants
5 in STEAM were awarded to computer science-fo-
6 cused programs and less than half of high schools
7 offered any computer science classes.

8 (13) Lack of universal computer science edu-
9 cation is evident in the lack of a widespread tech in-
10 dustry, which is overwhelmingly concentrated in a
11 few cities nationwide. Tech industry entrepreneur-
12 ship is concentrated in just a few States and com-
13 puter science education is limited to affluent schools
14 and students, placing low-income, minority, and
15 rural communities at risk of being left behind.

16 **SEC. 3. DEFINITIONS.**

17 In this Act:

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

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

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

1 (3) ELIGIBLE ENTITY.—In this section, the
2 term “eligible entity” means a State, local edu-
3 cational agency, or eligible Tribal school that—

4 (A) demonstrates an ability to carry out an
5 ambitious computer science education expansion
6 effort for all students served by the State, agen-
7 cy, or school, respectively, including tradition-
8 ally underrepresented students;

9 (B) in the case of a State, serves local edu-
10 cational agencies that meet the requirements of
11 section 1003(f) of the Elementary and Sec-
12 ondary Education Act of 1965 (20 U.S.C.
13 6303(f)); and

14 (C) in the case of a local educational agen-
15 cy, meets the requirements of such section
16 1003(f) (20 U.S.C. 6303(f)).

17 (4) ELIGIBLE TRIBAL SCHOOL.—The term “eli-
18 gible Tribal school” means—

19 (A) a school operated by the Bureau of In-
20 dian Education;

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

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

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

8 (6) LOCAL EDUCATIONAL AGENCY.—The term
9 “local educational agency” has the meaning given
10 the term in section 8101 of the Elementary and Sec-
11 ondary Education Act of 1965 (20 U.S.C. 8101).

12 (7) POVERTY LINE.—The term “poverty line”
13 has the meaning given the term in section 8101 of
14 the Elementary and Secondary Education Act of
15 1965 (20 U.S.C. 8101).

16 (8) SECRETARY.—The term “Secretary” means
17 the Secretary of Education.

18 (9) STATE.—The term “State” has the mean-
19 ing given the term in section 8101 of the Elemen-
20 tary and Secondary Education Act of 1965 (20
21 U.S.C. 7801).

22 (10) STEAM.—The term “STEAM” means the
23 subjects of science, technology, engineering, arts,
24 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 eligible entities to serve as models for na-
7 tional replication of computer science education ex-
8 pansion efforts.

9 (2) CONSORTIA AND PARTNERSHIPS.—An eligi-
10 ble entity may apply for a grant under this section
11 as part of a consortium or in partnership with a
12 State educational agency or other partner.

13 (3) DURATION.—Grants awarded under this
14 section shall be for a period of not more than 5
15 years.

16 (b) APPLICATION REQUIREMENTS.—An eligible enti-
17 ty that desires a grant under this section shall submit an
18 application to the Secretary at such time, in such manner,
19 and containing such information as the Secretary may re-
20 quire, including, at a minimum, plans for the following:

21 (1) Every high school student served by eligible
22 entity to have access to computer science education
23 not later than 5 years after receipt of grant funds.

24 (2) All students served by the eligible entity to
25 have access to a progression of computer science
26 education from prekindergarten through middle

1 school that prepares students for high school com-
2 puter science education.

3 (3) Expansion of overall access to rigorous
4 STEAM classes, utilizing computer science as a cat-
5 alyst for increased interest in STEAM more broadly,
6 and reducing the enrollment and academic achieve-
7 ment gap for underrepresented groups such as mi-
8 norities, girls, and youth from families living at, or
9 below, the poverty line.

10 (4) Continuous monitoring and evaluation of
11 project activities.

12 (5) Effectively sustaining project activities after
13 the grant period ends, and the length of time which
14 the applicant plans to sustain the project activities.

15 (c) USE OF GRANT FUNDS.—

16 (1) REQUIRED ACTIVITIES.—An eligible entity
17 that receives a grant under this section shall use the
18 grant funds for the following activities:

19 (A) Training teachers to teach computer
20 science.

21 (B) Expanding access to high-quality
22 learning materials and online learning options.

23 (C) Creating plans for expanding overall
24 access to rigorous STEAM classes, utilizing
25 computer science as a catalyst for increased in-

1 terest in STEAM more broadly, and reducing
2 course equity gaps for all students, including
3 underrepresented groups such as minorities,
4 girls, and youth from low-income families.

5 (D) Ensuring additional support and re-
6 sources, which may include mentoring for stu-
7 dents traditionally underrepresented in STEAM
8 fields.

9 (2) PERMISSIBLE ACTIVITIES.—An eligible enti-
10 ty that receives a grant under this section may use
11 the grant funds for the following activities:

12 (A) Building effective regional collabora-
13 tions with industry, nonprofit organizations, 2-
14 year and 4-year degree granting institutions of
15 higher education (including community colleges,
16 Historically Black Colleges and Universities,
17 Hispanic-serving institutions, Asian American
18 and Native American Pacific Islander-serving
19 institutions, American Indian Tribally con-
20 trolled colleges and universities, Alaska Native
21 and Native Hawaiian-serving institutions, Pre-
22 dominantly Black Institutions, Native Amer-
23 ican-serving, Nontribal institutions, and other
24 minority-serving institutions), and out-of-school
25 providers.

1 (B) Recruiting and hiring instructional
2 personnel as needed, including curriculum spe-
3 cialists.

4 (C) Preparations for effectively sustaining
5 project activities after the grant period ends.

6 (D) Disseminating information about effec-
7 tive practices.

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

10 (d) NATIONAL ACTIVITIES.—The Secretary may re-
11 serve not more than 2.5 percent of funds available for
12 grants under this section for national activities, including
13 technical assistance, evaluation, and dissemination.

14 (e) AUTHORIZATION OF APPROPRIATIONS.—There
15 are authorized to be appropriated to carry out this section
16 a total of \$250,000,000 for fiscal year 2024 and the suc-
17 ceeding 4 fiscal years.

18 **SEC. 5. REPORTING REQUIREMENTS.**

19 (a) GRANTEE REPORTS.—Each eligible entity that
20 receives a grant under this Act shall submit to the Sec-
21 retary a report, not less than twice a year during the grant
22 period, on the use of grant funds that shall include data
23 on the numbers of students served through activities fund-
24 ed under this Act, disaggregated by race (for Asian and
25 Native Hawaiian or Pacific Islander students using the

1 same race response categories as the decennial census of
2 the population), ethnicity, gender, and eligibility to receive
3 a free or reduced price lunch under the Richard B. Russell
4 National School Lunch Act (42 U.S.C. 1751 et seq.).

5 (b) REPORT BY THE SECRETARY.—Not later than 5
6 years after the first grant is awarded under this Act, the
7 Secretary shall submit to Congress a report based on the
8 analysis of reports received under subsection (a) with a
9 recommendation on how to expand the program under this
10 Act.

11 **SEC. 6. AMENDMENTS TO OTHER LAWS.**

12 (a) DEPARTMENT OF EDUCATION ORGANIZATION
13 ACT.—Section 203(c)(1) of the Department of Education
14 Organization Act (20 U.S.C. 3413(c)(1)) is amended by
15 inserting before the semicolon the following: “, which shall
16 include information with respect to the existence of com-
17 puter science education (as defined in section 3 of the
18 Computer Science for All Act of 2023), disaggregated by
19 the type of computer science education and by State, local
20 educational agency, and eligible tribal school (as such
21 terms are defined in such section 3)”.

22 (b) THE EDUCATION SCIENCES REFORM ACT OF
23 2002.—Section 153(a)(1) of the Education Sciences Re-
24 form Act of 2002 (20 U.S.C. 9543(a)(1)) is amended—

1 (1) in subparagraph (N), by striking “and” at
2 the end;

3 (2) in subparagraph (O), by adding “and” at
4 the end; and

5 (3) by adding at the end the following:

6 “(P) the existence of computer science
7 education (as defined in section 3 of the Com-
8 puter Science for All Act of 2023) in elemen-
9 tary schools and secondary schools, and the de-
10 gree of competency in computer science fields
11 among such students.”.

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