

AMENDED IN ASSEMBLY MARCH 28, 2016

CALIFORNIA LEGISLATURE—2015–16 REGULAR SESSION

ASSEMBLY BILL

No. 2329

Introduced by Assembly Member Bonilla
(Principal coauthor: Assembly Member Chiu)
(Coauthors: Assembly Members Dababneh and Low)

February 18, 2016

An act to add and repeal Chapter 19 (commencing with Section 53310) of Part 28 of Division 4 of Title 2 of the Education Code, relating to school curriculum.

LEGISLATIVE COUNSEL'S DIGEST

AB 2329, as amended, Bonilla. Computer science ~~curriculum: study-~~ *strategic implementation plan.*

Existing law requires the Instructional Quality Commission, on or before July 31, 2019, to consider developing and recommending to the State Board of Education computer science content standards for kindergarten and grades 1 to 12, inclusive, pursuant to recommendations developed by a group of computer science experts convened by the Superintendent of Public Instruction in consultation with the state board.

This bill would provide for the establishment of a computer science strategic implementation advisory board, composed of 20 members, as specified, to report necessary legislative changes related to computer science education to the State Department of Education and the state board on or before January 1, 2018, and to submit recommendations for a computer science strategic implementation plan to the department and the state board on or before March 1, 2018. The bill would require the department and the state board to consider the advisory board's

recommendations and the recommendations of the commission specified above, to develop and adopt a computer science strategic implementation plan, and to submit the plan to the Legislature on or before January 1, 2019. The bill's provisions would be repealed on January 1, 2021.

~~The California Council on Science and Technology is a nonprofit corporation organized pursuant to Section 501(c)(3) of the federal Internal Revenue Code. Existing law provides that the council was established at the request of the Legislature for the specific purpose of offering expert advice to state government on public policy issues significantly related to science and technology. Existing law authorizes school districts that require more than 2 years of mathematics courses for graduation to award mathematics credit for completion of a California State University and University of California approved "category C" computer science course. Existing law requires the California State University and requests the University of California to develop guidelines for high school computer science courses to be approved for purposes of recognition for admission to the California State University and the University of California, respectively, and would encourage the University of California to ensure that computer science courses that satisfy the mathematics subject area requirements for admission build upon fundamental mathematics content provided in courses that align with the academic content standards developed by the Academic Content Standards Commission.~~

~~This bill would request that the council undertake and complete a study, and submit the study to the Legislature, by January 1, 2018, analyzing the status and impact of recently enacted laws, as specified. The bill would state that the goal of the study is to help the Legislature, through a data-driven review, understand the needs to advance computer science in California's high school curriculum and to move forward with policy that increases computer science education opportunities in high school, leading to an increase in the number of computer science degree holders produced by public postsecondary educational institutions in California.~~

~~Vote: majority. Appropriation: no. Fiscal committee: no-yes.
State-mandated local program: no.~~

The people of the State of California do enact as follows:

1 *SECTION 1. (a) The Legislature finds and declares all of the*
2 *following:*

3 *(1) Computer science education is not only about access to*
4 *computers. It is about innovation and development of technology.*
5 *Computer science education builds pupils' computational and*
6 *critical thinking skills, which enables them to create, and not simply*
7 *use, the next generation of technological tools. This fundamental*
8 *knowledge is needed to prepare pupils for the 21st century*
9 *regardless of their ultimate field of study or occupation.*

10 *(2) Computer science drives job creation and innovation*
11 *throughout our state's economy. Providing access to computer*
12 *science education is a critical step for ensuring that California*
13 *remains competitive in the global economy and strengthens its*
14 *cybersecurity. Last year, there were over 600,000 technology jobs*
15 *open across the United States, and by 2018, 51 percent of all*
16 *science, technology, engineering, and mathematics (STEM) jobs*
17 *are projected to be in computer science-related fields. In*
18 *California, there are currently 86,436 open computing jobs, which*
19 *is four times the average demand rate in California.*

20 *(3) Computing occupations make up two-thirds of all projected*
21 *new jobs in STEM fields, making computer science one of the most*
22 *in-demand college degrees. However, California only had 3,525*
23 *computer science graduates in 2014 with only 15 percent female*
24 *graduates.*

25 *(4) There are fewer advanced placement (AP) examinations*
26 *taken in computer science than in any other STEM subject area.*
27 *Of the high school pupils in California who took the AP computer*
28 *science examination in 2015, only 26 percent were female, only*
29 *973 were Latino, and only 148 were African American. Only 242*
30 *schools in California, or 16 percent of California schools with AP*
31 *programs, offered the AP computer science course in the*
32 *2013–2014 school year.*

33 *(5) President Obama's Computer Science for All initiative builds*
34 *on the momentum at the state and local level. The President's*
35 *upcoming budget proposes funding for the United States*
36 *Department of Education, available over three years, for states to*
37 *increase access to computer science education in elementary and*
38 *secondary education classrooms. Under the program, states would*

1 submit comprehensive five-year “Computer Science for All” plans
2 in order to be eligible for federal funding, and every state with a
3 well-designed strategy would receive funds. In addition to
4 state-level grants, the budget will also dedicate funds for
5 competitive grants specifically for leading districts to execute
6 ambitious computer science education expansion efforts for all
7 pupils, including traditionally underrepresented pupils, with those
8 efforts to serve as models for national replication.

9 (6) However, access to computer science education for all pupils
10 is still a challenge especially for underrepresented communities.
11 Only one out of four K–12 schools teaches any computer science,
12 leaving 75 percent of pupils today without the opportunity to
13 develop skills that could help them thrive in the future.

14 (7) Exposure to computer science at a young age has the
15 potential to address the diversity gap in computer science fields.
16 Girls who take AP computer science in high school are 10 times
17 more likely to major in computer science in college. African
18 American and Latino pupils who take this course in high school
19 are over seven times more likely to major in this field.

20 (8) A Google-Gallup survey found that 9 out of 10 parents say
21 they want computer science taught in their schools, and the
22 majority of parents and teachers believe it should be required
23 learning for 21st century pupils.

24 (9) Computer science has often been confused with broader
25 technology education in schools. California should adopt distinct
26 standards for computer science focused on both the creation and
27 use of software and computing technologies at all levels of K–12
28 education.

29 (b) It is the intent of the Legislature that all pupils in
30 kindergarten and grades 1 to 12, inclusive, have access to computer
31 science education, with a strong focus on pupils underrepresented
32 in computer science, including girls, low-income and underserved
33 school districts, and rural and urban school districts.

34 SEC. 2. Chapter 19 (commencing with Section 53310) is added
35 to Part 28 of Division 4 of Title 2 of the Education Code, to read:

1
2 *CHAPTER 19. COMPUTER SCIENCE STRATEGIC IMPLEMENTATION*
3 *PLAN*

4
5 53310. *On or before March 1, 2017, a computer science*
6 *strategic implementation advisory board shall be established by*
7 *the department to develop recommendations for a computer science*
8 *strategic implementation plan. The advisory board shall be*
9 *comprised of the following members:*

10 (a) *A representative appointed by the Governor, who shall serve*
11 *as the chair of the advisory board.*

12 (b) *A representative appointed by the Senate Committee on*
13 *Rules.*

14 (c) *A representative appointed by the Speaker of the Assembly.*

15 (d) *A representative representing the Superintendent.*

16 (e) *A representative representing the state board.*

17 (f) *A representative representing the department.*

18 (g) *A representative representing a K–12 teacher or faculty*
19 *association, appointed by the Governor.*

20 (h) *A representative representing the Commission on Teacher*
21 *Credentialing.*

22 (i) *A representative representing the Computer Science Teachers*
23 *Association.*

24 (j) *A representative representing a large urban school district,*
25 *appointed by the Governor.*

26 (k) *A representative representing a rural school district,*
27 *appointed by the Governor.*

28 (l) *A representative of the private sector technology industry,*
29 *appointed by the Governor.*

30 (m) *A representative from the University of California.*

31 (n) *A representative from the California State University.*

32 (o) *A representative from the California Community Colleges.*

33 (p) *A representative from the Instructional Quality Commission.*

34 (q) *A representative from a computer science/STEM education*
35 *and research program, appointed by the Governor.*

36 (r) *A representative from a nonprofit student/school advocacy*
37 *organization, appointed by the Governor.*

38 (s) *A representative from a parent organization, appointed by*
39 *the Governor.*

- 1 (t) A representative representing school administrators and
2 superintendents, appointed by the Governor.
- 3 53311. On or before March 1, 2018, the advisory board shall
4 submit recommendations for a computer science strategic
5 implementation plan to the department and the state board that
6 includes, at a minimum, recommendations on all of the following:
- 7 (a) Broadening the pool of teachers to teach computer science.
8 These recommendations may provide, among other things, for the
9 following:
- 10 (1) Providing training and professional development for
11 education in computer science.
- 12 (2) Creating a teacher certification pathway in computer
13 science.
- 14 (3) Expanding scholarship eligibility and loan forgiveness
15 programs for computer science teachers in low-income and
16 underserved school districts and rural and urban school districts.
- 17 (b) Developing computer science content standards. These
18 recommendations may provide, among other things, for the
19 following:
- 20 (1) Defining computer science education principles that meet
21 the needs of pupils in kindergarten and grades 1 to 12, inclusive.
- 22 (2) Building on the successful integration of computer science
23 into the California science standards.
- 24 (3) Adapting computer science education standards being
25 developed in other states to address the needs of California pupils.
- 26 (4) Building on computer science frameworks for kindergarten
27 and grades 1 to 12, inclusive, developed by nationally recognized
28 computer science organizations and experts.
- 29 (5) Ensuring that all pupils have access to quality computer
30 science courses, which may include scaling up computer science
31 education coursework so that all high schools teach at least one
32 computer science course.
- 33 (6) Procuring a pathway for computer science to count toward
34 high school graduation and college admission requirements.
- 35 (7) Providing access to computer science in both college and
36 career pathways.
- 37 (8) Ensuring school districts have adequate broadband
38 connectivity and infrastructure and access to hardware and
39 software.

1 53312. *The Governor shall appoint a statewide computer*
2 *science liaison to serve the advisory board, including, but not*
3 *limited to, by coordinating the efforts of the advisory board and*
4 *ensuring that the advisory board's recommendations are*
5 *implemented to achieve the intentions of the computer science*
6 *strategic implementation plan.*

7 53313. (a) *The advisory board shall report any necessary*
8 *legislative changes related to computer science education to the*
9 *state board and to the department on or before January 1, 2018.*

10 (b) *The department and state board shall consider the*
11 *recommendations submitted by the advisory board pursuant to*
12 *Section 53311 and the recommendations submitted to the state*
13 *board by the Instructional Quality Commission pursuant to Section*
14 *60605.4, shall develop and adopt a computer science strategic*
15 *implementation plan, and shall submit the plan to the Legislature*
16 *on or before January 1, 2019.*

17 53314. *This chapter shall become inoperative on July 31, 2020,*
18 *and, as of January 1, 2021, is repealed, unless a later enacted*
19 *statute, that becomes operative on or before January 1, 2021,*
20 *deletes or extends the dates on which it becomes inoperative and*
21 *is repealed.*

22 ~~SECTION 1. (a) The Legislature finds and declares both of~~
23 ~~the following:~~

24 ~~(1) The California Council on Science and Technology was~~
25 ~~established by California academic research institutions, including~~
26 ~~the University of California, the University of Southern California,~~
27 ~~the California Institute of Technology, Stanford University, and~~
28 ~~the California State University, and was organized as a nonprofit~~
29 ~~corporation pursuant to Section 501(c)(3) of the Internal Revenue~~
30 ~~Code, in response to Assembly Concurrent Resolution 162~~
31 ~~(Resolution Chapter 148 of the Statutes of 1988).~~

32 ~~(2) The council was uniquely established at the request of the~~
33 ~~Legislature for the specific purpose of offering expert advice to~~
34 ~~state government on public policy issues significantly related to~~
35 ~~science and technology.~~

36 ~~(b) The California Council on Science and Technology is hereby~~
37 ~~requested to undertake and complete a study, and to submit the~~
38 ~~study to the Legislature, by January 1, 2018, analyzing the status~~
39 ~~and impact of recently enacted laws that do both of the following:~~

1 (1) ~~Authorizes school districts that require more than two years~~
2 ~~of mathematics courses for graduation to award mathematics credit~~
3 ~~for completion of a California State University and University of~~
4 ~~California approved “category C” computer science course.~~

5 (2) ~~Requires the California State University and requests the~~
6 ~~University of California to develop guidelines for high school~~
7 ~~computer science courses to be approved for purposes of~~
8 ~~recognition for admission to the California State University and~~
9 ~~the University of California, respectively, and would encourage~~
10 ~~the University of California to ensure that computer science courses~~
11 ~~that satisfy the mathematics subject area requirements for~~
12 ~~admission build upon fundamental mathematics content provided~~
13 ~~in courses that align with the academic content standards developed~~
14 ~~by the Academic Content Standards Commission.~~

15 (e) ~~The goal of the study is to help the Legislature, through a~~
16 ~~data-driven review, understand the needs to advance computer~~
17 ~~science in California’s high school curriculum and to move forward~~
18 ~~with policy that increases computer science education opportunities~~
19 ~~in high school, leading to an increase in the number of computer~~
20 ~~science degree holders produced by public postsecondary~~
21 ~~educational institutions in California.~~

22 (d) ~~The study is requested to focus on, but not be limited to, the~~
23 ~~implementation of Assembly Bill 1764 (Chapter 888 of the Statutes~~
24 ~~of 2014) and Senate Bill 1200 (Chapter 518 of the Statutes of~~
25 ~~2014), and is requested to include all of the following:~~

26 (1) ~~The number of schools that require three years of~~
27 ~~mathematics for graduation requirements.~~

28 (2) ~~The associated number of schools that have a qualifying~~
29 ~~computer science course that can satisfy the third year of the~~
30 ~~mathematics requirement.~~

31 (3) ~~The number of pupils taking a computer science course~~
32 ~~identified in paragraph (2).~~

33 (4) ~~The diversity by gender and ethnicity of those pupils~~
34 ~~identified in paragraph (3).~~

35 (5) ~~The number of pupils who took a computer science course~~
36 ~~identified in paragraph (2), graduated, and went to a postsecondary~~
37 ~~educational institution.~~

- 1 ~~(6) The number of pupils studying or continuing computer~~
- 2 ~~science course study at the postsecondary level.~~

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