
SENATE COMMITTEE ON EDUCATION

Senator Connie Leyva, Chair

2019 - 2020 Regular

Bill No: AB 1410 **Hearing Date:** June 19, 2019
Author: Quirk-Silva and O'Donnell
Version: May 16, 2019
Urgency: No **Fiscal:** Yes
Consultant: Ian Johnson

Subject: Teachers: Computer Science Access Initiative.

SUMMARY

This bill would establish the Computer Science Access Initiative with the goal of increasing the number of teachers who are authorized and trained to provide computer science instruction.

BACKGROUND

Existing law:

- 1) Authorizes the Commission on Teacher Credentialing (CTC) to issue single subject teaching credentials in agriculture, art, business, English, foreign language, health science, home economics, industrial and technology education, mathematics, music, physical education, science, and social science.
- 2) Through regulation, authorizes holders of credentials in mathematics, business, and industrial and technology education, as well as holders of supplementary authorizations in computer science, to teach computer science.
- 3) Authorizes the CTC to issue a multiple or single subject teaching credential with a specified concentration in a particular subject based upon the depth of an applicant's preparation in an important subject of the school curriculum in order to ensure excellence in teaching in specific subjects.
- 4) Authorizes the CTC to issue credentials for teaching specialties, including bilingual education, early childhood education, and special education. Education specialist teaching credentials are to be based upon a baccalaureate degree from an accredited institution, completion of a program of professional preparation, and standards that the CTC may establish.
- 5) Requires the Superintendent of Public Instruction to convene a computer science strategic implementation advisory panel (panel) to develop recommendations for a computer science strategic implementation plan, and requires the panel to submit recommendations for a strategic plan to the State Board of Education by January 15, 2019.
- 6) Requires the plan to include, at a minimum, recommendations on all of the following:

- a) Broadening the pool of teachers to teach computer science.
 - b) Defining computer science education principles that meet the needs of pupils in all grades.
 - c) Ensuring that all pupils have access to quality computer science courses.
- 7) Requires the Instructional Quality Commission (IQC) to consider developing and recommending to the State Board of Education (SBE), on or before July 31, 2019, computer science content standards for kindergarten and grades 1 to 12 pursuant to recommendations developed by a group of computer science experts.
 - 8) States that if a school district requires more than two courses in mathematics for graduation from high school, the district may award a student up to one mathematics course credit for successfully completing a “category C” approved computer science course. (Education Code 51225.35)
 - 9) Requires the California State University, and requests the University of California, to develop guidelines for high school computer science courses that may be approved for the purposes of recognition for admission. (EC 66205.5)

ANALYSIS

This bill:

- 1) Establishes the Computer Science Access Initiative with the goal of increasing the number of teachers who are authorized and trained to provide computer science instruction.
- 2) Specifies that the initiative shall be administered by the California Department of Education (CDE) in consultation with the Commission on Teacher Credentialing.
- 3) Requires CDE on or before July 1, 2020 to award grants to be used for one or both of the following purposes:
 - a) Increasing the number of single subject credential holders who obtain supplemental authorizations to teach computer science.
 - b) Providing professional development, aligned to the computer science content standards, to teachers who hold multiple subject or education specialist credentials so that they are able to teach computer science at the elementary level.
- 4) Specifies that a school district, a county office of education, a charter school, or a consortium of entities therein are eligible to apply for a grant.
- 5) Requires grant applicants to submit an application in a form determined by CDE that includes at least the following:

- a) A demonstration of the applicant's capacity to carry out the activities necessary to meet the objectives of the initiative.
 - b) A plan detailing how the applicant will meet one or both of the purposes of the initiative.
 - c) An estimate of the number of computer science supplemental authorizations the grant is expected to produce, or the number of multiple subject or education specialist credential holders expected to be trained, or both of those, through the use of grant funding.
 - d) Identification of any matching funds, in-kind matching resources, or outside funding expected to be leveraged in support of the proposed activities.
- 6) In awarding grants, requires California Department of Education (CDE) to ensure both of the following:
- a) At least one-half of the funds awarded are for increasing the number of single subject credential holders who obtain supplemental authorizations to teach computer science.
 - b) Priority is given to applications that seek to improve the availability of computer science instruction to pupils who at the time of the application have limited opportunity to study computer science, who are traditionally underrepresented in the study of computer science, or who live in geographic areas that have limited access to the study of computer science.
- 7) Requires a grant recipient to submit to CDE a report on all of the following:
- a) The number of multiple subject teachers trained and the number of authorizations in computer science produced as a result of the grant.
 - b) The number of additional classes or amount of instruction planned as a result of the grant.
 - c) The demographics of the pupils served or expected to be served by the teachers who have earned an authorization in computer science or who have received professional development as a result of the grant.

STAFF COMMENTS

- 1) ***Need for the bill.*** According to the author, "The need for computer science as part of primary education is paramount. Computer science coursework and opportunities prepare students for both careers in this fast growing field, and higher education degrees for top earning and highly valued expertise across disciplines and industry sectors. California's prosperity has been built upon a diverse and accomplished workforce, and despite a booming tech sector, California's high schools offer few of these courses. Breaking down the

perception that computer science is the realm of higher education alone is vital to expanding and empowering all students and communities to pursue this field of study, and provide for a robust information technology workforce in California.

AB 1410 establishes the Computer Science Access Initiative for this purpose, directing the Department of Education to award grants for professional development and authorization of educators for computer science instruction. The goal is to ensure we have more qualified Computer Science teachers and the resources to offer coursework for our students to take full advantage of.”

- 2) ***Recently adopted computer science content standards.*** The California Department of Education (CDE), Instructional Quality Commission (IQC), and State Board of Education (SBE) commenced the process for developing new California computer science content standards in September 2016. Per existing law, "on or before July 31, 2019, the IQC shall consider developing and recommending to the SBE computer science content standards for kindergarten and grades 1 to 12, inclusive, pursuant to recommendations developed by a group of computer science experts."

The IQC approved and recommended the draft computer science standards to the SBE on July 26, 2018. The SBE approved the IQC recommendation and adopted the computer science standards on September 6, 2018. The standards, while not mandatory, are expected to increase the number of computer science classes taught in California classrooms. Further, these standards are not expected to be implemented in the same way as math, English or science. Rather, they are more likely to be woven into instruction in other subject areas, akin to visual and performing arts.

- 3) ***Status of the Computer Science Strategic Implementation Plan.*** As discussed above, existing law calls for the Superintendent of Public Instruction (SPI) to convene a computer science strategic implementation advisory panel to develop recommendations for a computer science strategic implementation plan. The panel’s recommendations must be submitted to the SPI, the SBE, and the Legislature on or before January 15, 2019. Lastly, the SPI must develop, and the SBE must consider adopting, the implementation plan on or before July 15, 2019.

The SPI’s Computer Science Strategic Implementation Plan was presented to the SBE at its March 2019 meeting. Included in the plan are recommended strategies for K-12 computer science course offerings, improving access to computer science education for all, supporting educators to teach computer science, and making systematic improvements in computer science education. Among these strategies are the following state-level recommendations:

- a) Develop a web page to house materials that represent best practices in computer science education with an emphasis on recruiting and serving historically underrepresented groups, including females in computer science education.

- b) Design accountability systems to evaluate the progress of implementation efforts, provide evaluation criteria to adopt computer science instructional materials and develop an online curriculum and instruction steering committee for computer science, and recognize successful early adopters as a model for other teachers, schools, and local educational agencies.
 - c) Pass legislation to authorize the Commission on Teacher Credentialing to develop a single subject credential in computer science and develop a California Subject Examinations for Teachers for computer science.
 - d) Provide sustained, dedicated funding and staff at the state and local level to support computer science education efforts, help teachers complete coursework towards computer science authorization, and help teachers working in low-income and underserved school districts.
 - e) Establish a grant program for teachers to support the completion of course work for the computer science supplementary authorization, with additional incentive for teachers who work in low-income and underserved school districts and rural and urban school districts.
 - f) Provide professional development programs for in-service teachers to learn how to teach concepts and practices aligned to the California computer science standards, differentiated for grade and skill levels.
- 4) ***Race, gender, and income disparities in computer science course access.*** According to a 2015 report by the Level Playing Field Institute titled, *Path Not Found: Disparities in Access to Computer Science Courses in California High Schools*, access to computer science courses varies considerably. The report found that in California public high schools:
- a) Of the more than half a million high school students in the largest 20 districts, just 1 percent are enrolled in any computer science course.
 - b) Nearly 75 percent of schools with the highest percentage of underrepresented students of color offer no computer sciences courses.
 - c) African-American and Latino students make up 59 percent of California high school public school students but were just 11 percent of the 2014 AP Computer Science test takers.
 - d) Only 4 percent of schools with the highest percentage of low-income students offer AP Computer Science courses.
 - e) Only 8 percent of schools with the highest percentage of English Learners offered AP Computer Science courses.
 - f) Of the high school students who took the AP computer science exam in 2015, only 26 percent were female, 973 were Latino, and 148 were African American.

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OPPOSITION

None received

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