Model Computer Science Legislation 2021

State of XXXX XXth General Assembly

A Bill

For An Act To Be Entitled

ACT TO REQUIRE EACH PUBLIC SCHOOL AND PUBLIC CHARTER SCHOOL TO OFFER A COURSE IN COMPUTER SCIENCE; PROVIDE FUNDING FOR THE PROFESSIONAL DEVELOPMENT OF COMPUTER SCIENCE TEACHERS; AND ESTABLISH COMPUTER SCIENCE STANDARDS AND PATHWAYS FOR STUDENTS.

BE IT ENACTED BY THE [STATE LEGISLATIVE ENTITY] OF THE STATE OF XXXX:

SECTION 1. DEFINITIONS.

(a) Computer Science means the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society. Content should focus on teaching students how to create new technologies, not simply use technology.

(b) Computer Science Courses and Content means courses at elementary, middle, or high school that teach computer science as standalone implementations or, for elementary and middle school, embedded in other subjects.

(c) High-quality professional learning means professional development activities that:

(1) clarify the conceptual foundations of computer science,

(2) teach research-based practices, including hands-on and inquiry-based learning, and

(3) are intended for existing teachers with or without prior exposure to computer science.

(d) High-quality professional learning providers means institutions of higher education, non-profits, or private entities that have successfully designed, implemented, and scaled high-quality computer science professional learning for teachers as defined in subsection (c) and approved or recommended by the State Board of Education in coordination with the State Department of Education.

SECTION 2. State XXXX Code Title X, Chapter X, Subchapter X, is amended to read:

X-XX-XXX. Computer science — Required course offering.

(a) Beginning in the [DATE] school year, each public high school or public charter high school shall offer at least one (1) computer science course.

(b) Beginning in the [DATE] school year, each public middle school or public charter middle school shall offer instruction in exploratory computer science.

(c) Beginning in the [DATE] school year, each public elementary school or public charter elementary school shall offer instruction in the basics of computer science and computational thinking.

(d) A computer science course(s) or instruction in computer science offered by a public school or public charter school shall:

(1) Be of high quality, as defined by the State Board of Education; and

(2) Meet or exceed the standards and curriculum requirements established by the State Board of Education.

(e) Further, a computer science course offered by a public high school or public charter high school should be offered in an in-person setting, and be offered as a virtual or distance course option only when a traditional classroom setting is not feasible.

(f) Beginning [DATE, suggested June 30, 2021] and by each [DATE, suggested June 30th] thereafter, each school district shall submit to the [state board of education/state department of education] a report for the current academic year which shall include, but not be limited to, the following:

(1) The names and course codes of computer science courses offered in each

school, including course description and which state computer science standards are covered, to the extent such information is available;

(2) The number and percentage of students who enrolled in each computer science course, disaggregated by

(i) gender;
(ii) race and ethnicity;
(iii) special education status including students under IDEA or section 504;
(iv) English language learner status;
(v) eligibility for free and reduced-price meals; and
(vi) grade level;

unless a category contains between 1 and 5 students, or contains an amount that would allow the amount of another category that is five or less to be deduced, in which case the number shall be replaced with a symbol;

(3) The number of computer science instructors at each school, disaggregated by

(i) certification (if applicable);
(ii) gender;
(iii) race and ethnicity;
(iv) highest academic degree.

(g) The [STATE BOARD OF EDUCATION/STATE DEPARTMENT OF EDUCATION] shall post publicly on the [STATE BOARD OF EDUCATION/STATE DEPARTMENT OF EDUCATION] website on or before [DATE, suggested June 30] the data received, disaggregated by school and aggregated at the state level, for items 1 and 2 in subsection (f). The state shall publicly post aggregate statewide data for item 3 in subsection (f). The state department of education shall publish a list of computer science course codes and names, including course description and which courses align to the state computer science standards.

SECTION 3. COMPUTER SCIENCE PROFESSIONAL DEVELOPMENT.

(a) Subject to legislative appropriation, funds shall be appropriated to eligible entities to develop and implement teacher professional development programs for the required computer science courses and content, as defined in Section 1.

(b) For the purposes of this Section, eligible entities include:

(1) A local educational agency, or a consortium of local educational agencies, in the state, including public charter organizations;

(2) High-quality computer science professional learning providers, including institutions of higher education in the state, non-profits, or private entities working in partnership with local education agencies.

(c) Eligible uses of the funding are as follows:

(1) High-quality professional learning for K-12 computer science content (including travel to workshops)

(2) Credentialing for K-12 computer science teachers (including CTE and academic supplemental endorsements)

(3) Supports for K-12 computer science professional learning, including mentoring and coaching

(4) Creation of resources to support implementation

(5) Student recruitment

(d) As a condition of receiving the funds, eligible entities must submit an application to the State Department of Education. The application must, at a minimum, address how the entity will:

(1) Reach new and existing teachers with little to no computer science background;

(2) Use research- or evidence-based practices for high-quality professional development;

(3) Focus the professional learning on the conceptual foundations of computer science;

(4) Reach and support marginalized racial and ethnic groups underrepresented in computer science;

(5) Provide teachers with concrete experience with hands-on, inquiry-based practices;

(6) Accommodate the particular teacher and students needs in each district and school; and

(7) Ensure that participating districts shall begin offering the course(s) and/or content within the same or next school year after the teacher receives the professional learning.

(e) Priorities for Awards. The State Department of Education shall prioritize the following applications:

(1) Local education agencies that are working in partnership with providers of high-quality professional learning for K-12 computer science.

(2) Proposals that describe strategies to enroll female students and students from marginalized racial and ethnic groups underrepresented in computer science, students eligible for free and reduced-price meals, students with disabilities, and English language learners.

(3) Proposals from rural or urban areas with a low penetration of K-12 computer science offerings, including local education agencies that partner together to form clusters of implementation.

(f) Any monies remaining in the fund at the end of the fiscal year shall not revert to the credit of the general revenue.

(g) Metrics. The award recipient shall report annually, at a minimum:

(1) the number of teachers prepared,

(2) students reached,

(3) number and percent of students reached disaggregated by gender, race/ethnicity, and socioeconomic status,

(4) number and percent of students with passing AP exam scores for high school

AP courses, by gender and race/ethnicity, once that data is available, and

(5) number of teachers that started implementing computer science (limited to middle and high school implementation) versus the number of prepared teachers that attended professional learning.

The State shall make these reports public.

SECTION 4. ESTABLISHMENT OF COMPUTER SCIENCE STANDARDS.

(a) Prior to the beginning of the [DATE] school year, the State Board of Education and Department of Education shall develop rigorous K-12 computer science standards and shall consider existing computer science frameworks and content standards, which include, but are not limited to, the K–12 Computer Science Framework and the K–12 computer science content standards developed by the Computer Science Teachers Association.

--- OPTIONAL ---

SECTION 5. TEMPORARY LANGUAGE. DO NOT CODIFY. COMPUTER SCIENCE EDUCATION TASK FORCE -- CREATION, MEMBERSHIP, AND DUTIES.

(a) The board shall establish a computer science education task force to develop a state strategic plan for expanding computer science education in elementary and secondary schools.

(b) The computer science education task force shall include representatives of:

(1) the board of education;

(2) the state department of education;

(3) industry;

(4) nonprofit organizations;

(5) school superintendents association;

(6) the Governor's STEM Action Center [IF APPLICABLE];

(7) the Governor’s Education Advisor;

(8) the system of higher education;

(9) legislators from the house and senate; and

(10) a teacher leader from a statewide association representing computer science teachers.

(c) The board, in consultation with the computer science education task force created in Subsection (b), shall develop a state strategic plan for a statewide computer science education program, including the following:

(1) a statement of purpose that describes the objectives or goals the board will accomplish by implementing a computer science education program, the strategies by which those goals will be achieved, and a timeline for achieving those goals;

(2) a summary of the current state landscape for K-12 computer science education, including demographic reporting of students taking these courses;

(3) a plan for expanding computer science education opportunities to every school in the state within 5 years and increasing the representation of students from traditionally underserved groups in computer science including female students, students from historically underrepresented racial and ethnic groups, students with disabilities, English-language learner students, students who qualify for free and reduced-price meals, and rural students;

(4) a plan for the development of rigorous standards and curriculum guidelines for K-12 computer science, including ways to incorporate computer science into existing standards at the elementary level, as appropriate;

(5) a plan for defining high quality professional learning for teachers to begin teaching computer science;

(6) an ongoing evaluation process that is overseen by the board;

(7) proposed rules that incorporate the principles of the master plan into the state's public education system as a whole; and

(8) a plan to ensure long-term sustainability.

(d) On or before [DATE], the board shall present the board's state strategic plan described in Subsection (c) to the relevant legislative committees.

(e) The computer science education task force expires on [DATE, GENERALLY 1 YEAR AFTER THE DEADLINE IN SUBSECTION (D)].

SECTION 6. STATE COMPUTER SCIENCE SUPERVISOR POSITION.

(a) The state department of education shall create a computer science supervisor position. The computer science supervisor shall be responsible for carrying out the work of this bill within the department, including the development and implementation of the computer science education strategic plan.

(b) [INCLUDE STATE-SPECIFIC REQUIREMENTS HERE, INCLUDING THE COST FOR THE POSITION]

SECTION 7. TEACHER CERTIFICATION.

(a) Before [DATE], the state board of education shall create an endorsement in secondary computer science available to all teachers who hold a valid license and demonstrate sufficient content knowledge in computer science, as determined by the state board of education.

(b) Before [DATE], the state board of education shall create an initial license in computer science for eligible individuals who demonstrate sufficient knowledge in computer science content and methods, as determined by the state board of education.

(c) Subject to legislative appropriation, funds shall be appropriated for a Computer Science Education Grant Program to support teachers in the costs associated with becoming certified, endorsed, or licensed in computer science, including professional development, training, costs for licensure exams, courses in pedagogy, and/or courses in computer science content. Eligible entities shall include individual teachers, local education agencies, professional learning providers, and institutions of higher education in the state.

SECTION 8. MAKING COMPUTER SCIENCE COUNT.

(a) The department of education shall, before [DATE], develop a high school graduation policy that allows a student to fulfill one unit of academic credit with a district-approved computer science course for any mathematics or science unit required for high school graduation.

(b) Beginning with the graduating class of 2022, a computer science course successfully completed under part (a) of this section shall be equivalent to either:

(1) one mathematics course;

(2) one science course; or

(3) one computer science course;

in the same way in which the course can count towards graduation, for the purpose of satisfying the university's freshman admission requirements as determined by the university.

SECTION 9. INCENTIVES FOR PRE-SERVICE TEACHER PREPARATION.

(a) On and after [DATE], any program of teacher preparation leading to professional certification shall include, as part of the curriculum, instruction in computer science and computational thinking as applied to student learning and classroom instruction that are grade-level and subject-area appropriate.

(b) The [STATE APPROPRIATIONS ENTITY] shall create and appropriate funds for a scholarship program for pre-service teachers to take a course in computer science. A pre-service teacher enrolled in a state accredited institution of higher education and working towards a degree to become qualified to teach any K-12 subject may receive a [$1000] scholarship after successful completion of one course in computer science. The scholarship program will prioritize the recruitment of candidates from underrepresented groups and/or candidates who agree to teach computer science in schools with higher percentages of students from underrepresented groups, rural schools, and/or underresourced schools.

(c) The [STATE APPROPRIATIONS ENTITY] shall appropriate funds to eligible preservice education programs in the state to develop and implement pathways in computer science education. The pathways would prepare an enrolled pre-service teacher to add a certification to teach computer science education to their intended major and area of certification. The pathways would be open to pre-service teachers at both secondary and elementary levels, and may include collaborations among schools of computer science, schools of education, and non-profit organizations.

--- Additional Guidance ---

- Models for Funding Professional Learning, including considerations for high-quality professional learning.
- A calculator that models the cost of preparing a teacher in each school in the state.
- The K-12 Computer Science Framework, which can be used by states to develop standards.
- The Computer Science Teachers Association (CSTA) K-12 Computer Science Standards can be found here.