LEGISLATIVE EDUCATION STUDY COMMITTEE
BILL ANALYSIS
55th Legislature, 1st Session, 2021

Bill Number HB188/aHAFC **Sponsor** Sariñana

Tracking Number .218998.1 **Committee Referrals** HEC/HAFC; SEC

Short Title Secondary Computer Science Teacher License

Analyst Canada, Hathaway **Original Date** 2/3/21
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BILL SUMMARY

Synopsis of HAFC Amendment

The House Appropriations and Finance Committee Amendment to HB188 (HB188/aHAFC) omits the appropriation from the bill.

Synopsis of Original Bill

House Bill 188 (HB188) requires the Public Education Department (PED) to create a license endorsement in secondary computer science by December 31, 2021. HB188 requires PED to consult with computer science education experts when developing computer science endorsement requirements.

FISCAL IMPACT

The bill does not include an appropriation.

The Senate Finance Committee Substitute for Senate Bill 377 includes a $75 thousand appropriation from the general fund to PED for a secondary computer science teacher license endorsement for expenditure in FY22. Any unexpended or unencumbered balance remaining at the end of FY22 shall revert to the general fund.

The House Appropriations and Finance Committee Substitute for House Bill 2 (HB2/HAFCS) also includes a $500 thousand appropriation for science, technology, engineering, arts and math initiatives from the public education reform fund to PED for expenditure in FY21 and FY22. Any unexpended balance at the end of FY22 shall revert to the public education reform fund. HB2/HAFCS includes an appropriation to PED for $3.02 million for science, technology, engineering, arts and math initiatives for FY22.

SUBSTANTIVE ISSUES

Licensure. HB188 requires PED to create an endorsement in secondary computer science available to teachers who hold a valid license and to those who demonstrate sufficient content knowledge in computer science. The bill specifies PED will determine the requirements for the endorsement.

PED's Licensure Bureau advises potential licensees that an endorsement can be attached to a teaching license to specify the teaching field in which a teacher may teach as authorized by the department. The bill specifies the endorsement should be in secondary computer science. Currently, a secondary license allows an individual to teach seventh through 12th grade and requires the licensee is endorsed in the subject they are teaching. To earn an endorsement, license holders must complete 24 to 36 credit hours through an institution of higher education in the content area seeking endorsement in or pass a teacher licensure exam in the content area. PED's analysis notes that PRAXIS, the exams PED uses to measure academic skills and subject specific content knowledge needed for teaching, is available for computer science, creating a possibility for creating a pathway to a computer science endorsement.

By measures determined through a partnership between the national Computer Science Teachers Association (CSTA) and others, New Mexico is progressing toward making computer science a fundamental part of the public school system. Below are seven elements of the state policy framework developed by CSTA and partners that measure New Mexico's progress toward the goal to integrate computer science within public schools.

- **CSTA Computer Science Standards.** Through a partnership with the CSTA, the Association for Computing Machinery, school districts, and other computer-science-relevant stakeholders, standards were developed for kindergarten through 12th grade computer science standards and incorporated into practice through PED administrative rulemaking in 2018.
- **Funding.** In FY21, PED was appropriated a total of $4.3 million to invest in teacher professional development for computer science, mathematics, and science. For FY22, PED requested $2.1 million for the science, technology, engineering, arts and math (STEAM) initiative to support implementation of mathematics, science, and computer science through professional development and technical assistance. PED also requested $161 thousand to support implementation of kindergarten through eighth grade computer science through professional development and technical assistance; the appropriation for this purpose in FY21 has not been spent yet.
- **Certification.** New Mexico currently does not have certification for computer science and HB188 would require PED to develop a computer-science-specific license specialization.
- **Preservice training.** The state has not yet established guidelines or approved programs at institutions of higher education to offer computer science to preservice teachers.
- **High School Course Offerings.** The state does not yet require that all secondary schools offer computer science. The percentage of New Mexico high schools teaching computer science increased from 23 percent in FY19 to 32 percent in FY20. Nationally, 47 percent of high schools teach computer science. Additionally, only 371 exams were taken in AP Computer Science by high school students in New Mexico in 2020.
- **Graduation Requirement.** Computer science can count as a mathematics or science credit for graduation, provided that a student has demonstrated competence in mathematics or science.

- **Institutions of Higher Education Admission Requirement.** The state does not yet allow computer science to count as a core admission requirement at institutions of higher education.

Vacancies. According to PED, educators with an endorsement in secondary math, science or technology education, or those who have a vocational license are eligible to teach computer science. HB188 does not contain provisions that would prohibit these individuals to continue to teach this coursework. According to statewide teacher vacancy figures collected annually by New Mexico State University, based off of public job postings in FY21, there were 54 math vacancies, 33 science vacancies, and 14 technology and media vacancies statewide.

ADMINISTRATIVE IMPLICATIONS

PED notes they will need to develop competencies for computer science before an endorsement pathway can be created. The department may have difficulty meeting the timeline because the process of competency development, rulemaking, and endorsement development will require a quick turnaround.

OTHER SIGNIFICANT ISSUES

What Computer Science Could Mean for Students. Computing occupations are the number one source of all new wages in the United States and the U.S. Department of Labor and Employment reports information technology occupations are expected to grow 11 percent from 2019 to 2029. The median annual wage for computer and information technology occupations in New Mexico is $71,285, significantly higher than the average salary of $45,400 in the state. Access to computer science courses could open pathways for students to pursue jobs that both show strong employment opportunity (New Mexico currently has 1,844 open computing jobs) and compensate well. In addition to job potential, society is increasingly reliant on computing and developing computer science skills. Attaining these skills a way for students to learn and apply critical thinking skills well-suited to college and career expectations of the 21st century.

Despite the potential for students' futures, a nonprofit computer science advocacy organization reports only 173 bachelor's degrees in computer science were awarded from New Mexico institutions in 2018. Further, teacher preparation programs in New Mexico did not graduate any new teachers prepared to teach computer science in 2018, indicating a mismatch between career potential for students' and available resources to teach computer science in New Mexico schools.

Endorsement Requirements by Experts. HB188 requires PED to collaborate with computer education experts with experience in creating or supporting computer science endorsement pathways. In summer 2020, PED created the elementary mathematics specialist endorsement through a similar process in collaboration with mathematic teaching experts through the rulemaking process. Stakeholders worked with PED's Math and Science Bureau to provide suggestions to develop the license endorsement based on research and national best practice from other states' implementation. Many stakeholders support the joint position of the Association of Mathematics Teacher Educators (AMTE), the Association of State-Supervisors of Mathematics, the National Council of Supervisors of Mathematics, and the National Council of Teachers of Mathematics that elementary mathematics specialists are necessary for supporting teachers to develop the content, pedagogy, and leadership to transform mathematics education. This position requires that certification be advanced, based on the advanced and mathematical content

knowledge needed for the position and as recommended as best practice in the field, and programs need to be developed to prepare these professionals.

PED rule outlines licensed level 2 or level 3-A teachers can add an endorsement as an elementary mathematics specialist to an existing license if they have held that license for a minimum of three years and hold a current teaching license in elementary education. In rule, PED outlines an individual can obtain this license through two pathways. The first is to provide evidence of relevant work and professional learning experience in kindergarten-eighth grade mathematics approved by PED. The second pathway is to complete 18 semester hours of mathematics education courses; nine of those courses must be upper-division credit.

ALTERNATIVES

Professional Development. One approach other states are pursuing is to train current teachers in the workforce and providing them with professional development in a specific program or curricula the school commits to offering. Recently, the Legislature has appropriated PED funding to support teacher professional development in computer science.

POSSIBLE QUESTIONS

A 2018 report from Computer Science for All, funded by the National Science Foundation and comprising computer science education researchers, leaders from state departments of education, teacher education researchers, and computer scientists, shared recommendations on how to build a computer science teacher workforce. In the report, it posed questions for teacher education programs at colleges and universities regarding implementation:

1) Where does computing education fit into existing curricula and organizations?
2) Is computing education more like science education or mathematics education?
3) Does it fit more naturally in educational technology or education psychology?
4) In which courses should we teach all preservice teachers about computer science and about teaching computer science?
5) How do we prepare teachers to engage with computing and students from underrepresented groups?

RELATED BILLS

Relates to HB126, Computer Science Course in Each High School, which requires school districts to offer a computer science course in high school beginning in the 2022-2023 school year.

SOURCES OF INFORMATION

- LESC Files
- PED

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