

The Florida Senate
BILL ANALYSIS AND FISCAL IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: The Professional Staff of the Committee on Education

BILL: SB 1056

INTRODUCER: Senator Passidomo

SUBJECT: Computer Coding Instruction

DATE: January 12, 2018

REVISED: _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	<u>Bouck</u>	<u>Graf</u>	<u>ED</u>	<u>Pre-meeting</u>
2.	_____	_____	<u>AED</u>	_____
3.	_____	_____	<u>AP</u>	_____

I. Summary:

SB 1056 promotes opportunities for public middle and high school students to learn computer coding taught by qualified teachers. Specifically, the bill:

- Expands access to coding courses for students, which:
 - Phases-in a requirement for school districts with a specified number of traditional public middle and high schools to provide coding courses within specified timeframes.
 - Requires the Commissioner of Education to at least annually identify and publish a list of courses that include substantial coding content and meet the specified definition of a coding course.
- Creates opportunities for teachers to be certified and trained to teach coding courses, and:
 - Requires the Department of Education (DOE) to award funding to a school district or consortium of school districts to deliver or facilitate training for educators to earn a credential to teach coding courses.
 - Specifies the qualifications for an educator to teach a coding course.
- Provides the following incentives in the form of a one-time bonus to a public school educator:
 - \$3,000, if the educator earns or already holds a certification in computer science, and meets other specified criteria.
 - \$1,500, if the educator earns an applicable industry certification, and meets other specified criteria.
- Requires the DOE to provide “high-need district technology grants” to school districts based on a school district’s high need.

The bill appropriates \$15 million in nonrecurring funds from the General Revenue Fund to the Department of Education for the 2018-2019 fiscal year.

The bill takes effect upon becoming law.

II. Present Situation:

Computing occupations are the primary source of all new wages in the United States, and make up two-thirds of all projected new jobs in science, technology, engineering, and mathematics (STEM) fields.¹ In Florida, employment in computer occupations is projected to grow by 15.2 percent from 2017 to 2025.² In 2017, the estimated average yearly wage for such occupations was \$79,518.³

Access to Coding Courses

Public schools are required to provide students in kindergarten through grade 12 opportunities for learning computer science including, but not limited to, computer coding and computer programming.⁴ Such opportunities may include:⁵

- Coding instruction in elementary and middle school;
- Instruction to develop students' computer usage and digital literacy skills in middle school; and
- Courses in computer science, computer coding, and computer programming in high school, including earning-related industry certifications.

Coding Courses and Industry Certifications

Currently, the Course Code Directory (CCD) does not list any academic courses specific to coding in grades 6-8 or grades 9-12.⁶ However, the CCD includes academic courses in computer science, many of which contain aspects of computer coding,⁷ in the grades 9-12 section of the CCD.⁸ Such courses are limited to acceleration courses under the Advanced Placement,

¹ Code.org, *Support K-12 Computer Science Education in Florida*, available at <https://code.org/advocacy/state-facts/FL.pdf>, at 1.

² Computer Occupations include Computer and Information Research Scientists, Computer Systems Analysts, Information Security Analysts, Computer Programmers, Software Developers, Applications, Software Developers, Systems Software Web Developers, Database Administrators, Network and Computer Systems Administrators, Computer Network Architects, Computer User Support Specialists, Computer Network Support Specialists, and Computer Occupations, All Other. Department of Economic Opportunity, *2017-2025 Statewide Projections*, available at http://lmsresources.labormarketinfo.com/library/ep/2017_2025/F25stw.xls.

³ The Florida Senate staff analysis of Department of Economic Opportunity, *2017 Wage Estimates, Florida*, available at <http://www.floridajobs.org/labor-market-information/data-center/statistical-programs/occupational-employment-statistics-and-wages>.

⁴ Section 1007.2616(1), F.S.

⁵ *Id.*

⁶ Email, Florida Department of Education (Jan. 11, 2018). The Course Code Directory (CCD) lists all public preK-12 and postsecondary career and technical education courses that are available for use by school districts. Programs and courses funded through the Florida Education Finance Program and courses or programs for which students may earn credit toward high school graduation must be listed in the CCD. The CCD maintains course listings for administration and service assignments, K-12 education, exceptional student education, career and technical education, and adult education. Rule 6A-1.09441, F.A.C.. The CCD also includes details regarding appropriate teacher certification levels. Section 1012.55(1)(c), F.S.

⁷ Florida Department of Education, *Course and CTE Programs that Include the New Computer Science Standards for the 2017-2018 School Year*, Memorandum DPS: 2017-26 (March 3, 2017).

⁸ Email, Florida Department of Education (Jan. 11, 2018).

Advanced International Certificate of Education, and International Baccalaureate programs.⁹ Although the DOE has identified 35 industry certifications that include computer coding,¹⁰ such industry certifications, listed in the career and technical education section of the CCD, are not linked to any specified coding course.¹¹

Teacher Qualifications

Educator Certification in Computer Science

The standard specialization requirements for an educator to be certified to teach K-12 academic computer science courses include:¹²

- A bachelor's or higher degree with an undergraduate or graduate major in computer science or computer science education, or
- A bachelor's or higher degree with 30 semester hours in computer science or computer science education to include credit in:
 - Computer applications and
 - Computer programming.

The standard requirements for an educator to be certified to teach career and technical education courses and programs in information technology¹³ are specified in the appropriate secondary and postsecondary adult vocational program curriculum framework.¹⁴

General Requirements for Educator Certification

The Legislature has established certification requirements to assure that educational personnel in public schools possess appropriate skills in reading, writing, and mathematics, and adequate pedagogical knowledge, including the use of technology to enhance student learning, and relevant subject matter competence to demonstrate an acceptable level of professional performance.¹⁵

Each person employed as a teacher in a public school must hold a certificate required by law and rules of the State Board of Education.¹⁶ Educator certificates include the:

⁹ Florida Department of Education, *2017-2018 Course Code Directory, Grades 9 to 12 and Adult Education Course Listing*, <http://www.fldoe.org/core/fileparse.php/7746/urlt/1718CCD-Basic9-12.pdf>, at 8-9.

¹⁰ *Id.* at Attachment B.

¹¹ Email, Florida Department of Education (Jan. 11, 2018).

¹² Rule 6A-4.0121, F.A.C.

¹³ The Information Technology Career Cluster incorporates four pathways. Network Systems; Information Support & Services; Programming & Software Development; and Interactive Media. Florida Department of Education, *Information Technology*, <http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/info-technology.stml> (last visited Jan. 12, 2018).

¹⁴ Florida Department of Education, *Information Technology*, <http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/curriculum-frameworks/2017-18-frameworks/info-technology.stml> (last visited Jan. 12, 2018).

¹⁵ Section 1012.54, F.S.

¹⁶ Sections 1012.55(1)(b) and 1002.33(12)(f), F.S. Teacher certification is administered and implemented by the DOE. Rule 6A-4.001, F.A.C.

- Professional certificate, which is the standard, renewable type of certificate.¹⁷ The professional certificate is valid for up to five years.¹⁸
- Temporary certificate, for employment in full-time positions for which a Florida educator certificate is required.¹⁹ The temporary certificate is valid for three school fiscal years and is nonrenewable.²⁰

In addition, school districts are authorized to issue adjunct teaching certificates to part-time teachers who have expertise in the subject area to be taught.²¹

Professional Development

A district school board may design alternative teacher preparation programs to enable persons already holding a certificate to add an additional coverage to their certificates.²² Each alternative teacher preparation program must be approved by the DOE to assure that persons who complete the program are competent in the necessary areas of subject matter specialization.²³ Two or more school districts may jointly participate in an alternative preparation program for teachers.²⁴

Educator Performance Evaluations

Instructional personnel²⁵ employed by Florida's public school districts must undergo an annual performance evaluation.²⁶

The evaluation system for instructional personnel must differentiate among four levels of performance as follows:²⁷

- Highly effective.
- Effective.
- Needs improvement or, for instructional personnel in the first 3 years of employment who need improvement, developing.
- Unsatisfactory.

¹⁷ Rule 6A-4.004(2)(a), F.A.C.

¹⁸ Section 1012.56(7)(a), F.S. The validity period is expressed as 5 years from July 1 of the school fiscal year. Rule 6A-4.0051(3)(c), F.A.C.

¹⁹ Rule 6A-4.004(1)(a)2., F.A.C.

²⁰ Section 1012.56(7), F.S. The validity period is expressed in school fiscal years. Rule 6A-4.004(1)(a), F.A.C.

²¹ Section 1012.57(1), F.S.

²² Section 1012.575, F.S.

²³ *Id.*

²⁴ *Id.*

²⁵ Instructor personnel means any K-12 staff member who provides direct instructional services to students or provide direct support in the learning process of students. Section 1012.01(2), F.S. Instructional personnel includes classroom teachers, student personnel services, librarians and media specialists, education paraprofessionals, and other instructional staff. *Id.*

²⁶ Section 1012.34(3), F.S. Newly hired classroom teachers are evaluated twice in their first year of teaching in a school district. *Id.*

²⁷ Section 1012.34(2)(e), F.S.

Support for Technology in the Classroom

The DOE is responsible for developing a 5-year strategic plan for establishing Florida digital classrooms. The plan must:²⁸

- Describe how technology will be integrated into classroom teaching and learning to improve student performance outcomes.
- Identify minimum technology requirements that include specifications for hardware, software, devices, networking, security, and bandwidth capacity.
- Establish minimum requirements for professional development opportunities and training to assist district instructional personnel and staff with the integration of technology into classroom teaching.
- Identify the types of digital tools and resources that can assist district instructional personnel and staff in the management, assessment, and monitoring of student learning and performance.

The Florida digital classrooms allocation supports the efforts of school districts and schools, including charter schools, to integrate technology in classroom teaching and learning to ensure students have access to high-quality electronic and digital instructional materials and resources, and empower classroom teachers to help their students succeed.²⁹

III. Effect of Proposed Changes:

SB 1056 promotes opportunities for public middle and high school students to learn computer coding taught by qualified teachers. Specifically, the bill:

- Expands access to coding courses for students, which:
 - Phases-in a requirement for school districts with a specified number of traditional public middle and high schools to provide coding courses within specified timeframes.
 - Requires the Commissioner of Education (commissioner) to at least annually identify and publish a list on the Department of Education (DOE) website and in the Course Code Directory (CCD) of courses that include substantial coding content and meet the specified definition of a coding course.
- Creates opportunities for teachers to be certified and trained to teach coding courses, and:
 - Requires the DOE to award funding to a school district or consortium of school districts to deliver or facilitate training for educators to earn a credential to teach coding courses.
 - Specifies the qualifications for an educator to teach a coding course.
- Provides the following incentives in the form of a one-time bonus to a public school educator:
 - \$3,000, if the educator earns or already holds a certification in computer science, and meets other specified criteria.
 - \$1,500, if the educator earns an applicable industry certification, and meets other specified criteria.

²⁸ Section 1001.20(4)(a), F.S.

²⁹ Section 1011.62(12)(a), F.S. The General Appropriations Act allocates \$80,000,000 for the Digital Classrooms allocation. Specific Appropriation 91, ch. 2017-18. The minimum amount allocated to each district is \$500,000.

Id.

- Requires the DOE to provide “high-need district technology grants” to school districts based on a school district’s high need.

Access to Coding Courses

The bill phases in a requirement that school districts provide students with access to coding courses taught by appropriately credentialed teachers. Specifically, a school district with:

- Ten or fewer traditional public middle, high, and combination schools³⁰ must provide at least one coding course in at least one of the schools by the 2020-2021 school year. The school district may use a blended model to meet this requirement. In 2016-2017, 36 school districts had 10 or fewer such schools.³¹
- More than 10 traditional public middle, high, and combination schools must provide coding courses as follows:
 - Beginning in the 2018-2019 school year, in at least 4 percent of the school district’s total number of middle, high, and combination schools.
 - Beginning in the 2019-2020 school year, in at least 7 percent of the school district’s total number of middle, high, and combination schools.
 - Beginning in the 2020-2021 school year, in at least 10 percent of the school district’s total number of middle, high, and combination schools.

In 2016-2017, 31 school districts had more than 10 such schools.³²

The bill specifies that a school district may not require a charter school to offer a coding course. However, if a charter school offers a coding course that meets the specified definition, a school district may include the charter school’s coding course in the district’s threshold associated with the number of public schools in the district that must providing coding courses.

Accordingly, school districts that do not provide coding courses in the required number of schools, based on thresholds specified in the bill, may be required to add qualifying coding courses to the courses offered by the district secondary schools. In addition, the school district may need to hire qualified teachers to teach such courses.

The bill also requires the commissioner to at least annually identify and publish a list of courses on the DOE’s website and in the CCD that include a substantial amount of coding content and that meet the definition of a coding course specified in the bill. The commissioner is encouraged to select accelerated courses and courses that lead to an industry certification. Accordingly, the DOE may need to update the CCD to accommodate the identification of courses with coding content.

The Florida Chamber Foundation asserts that by integrating coding and computer science instruction into elementary, secondary, and postsecondary curricula, Florida can help ensure that

³⁰ The bill defines a combination school as a public school in which any of grades 6-12 are taught.

³¹ Florida Department of Education, *Regular Elementary, Middle/Junior High, Senior High, and Combination Schools, 2016-17, Survey 2-FINAL*, available at <http://www.fldoe.org/core/fileparse.php/7588/urlt/RegElemMiddleHighCombo.xls>.

³² *Id.*

its students have the digital skills to succeed in 21st-century jobs and to help the state remain globally competitive.³³

Teacher Qualifications

The bill specifies the means through which a teacher may become certified to teach a coding course identified by the commissioner, and requires that such coding courses must be taught by an educator who:

- Holds a state certification in computer science or a computer coding or computer science industry certification in the course being taught; or
- Has professional experience in the field of computer coding and holds an adjunct teaching certificate.

The bill provides that, subject to legislative appropriation, the DOE must award funding to a school district or a consortium of school districts to deliver or facilitate training for educators to earn a credential to teach a coding course. The funds must be distributed in a manner that allows equitable distribution based on the geographic distribution of the student population. The school district or consortium of school districts that apply for such funding may use the funds to:

- Establish or enhance alternative teacher preparation programs which enable persons who already hold a certificate to add an additional coverage to their certificates.
- Collaborate with a public college or university to provide necessary training.
- Provide educators with funding to obtain an applicable industry certification.

Such efforts may increase the number of teachers who possess a computer science credential or an applicable industry certification. In 2014-2015, the number of Florida teacher certificates in computer science was 593, which represented 0.15 percent of all certificates.³⁴

The bill authorizes any educator who teaches at a public middle, high, or combination school, or a charter school and who was evaluated as effective or highly effective in the prior school year to participate in the program. The bill also authorizes a newly-hired educator who has not been evaluated to participate in the program.

Teacher Bonus

The bill creates a one-time bonus for educators who meet the following criteria:

- Were evaluated as effective or highly effective in the prior school year, unless such teachers are newly hired and have not been evaluated.
- Commit to teach an applicable coding course in a middle, high, or combination school in this state for three years.

In addition to meeting the specified criteria, the educators must:

³³ Florida Chamber Foundation, *Florida Jobs 2030*, available at http://www.flchamber.com/wp-content/uploads/2017/01/FINAL_Florida-Jobs-2030-Report-013117.pdf, at 57.

³⁴ Florida Department of Education, *Identification of Critical Teacher Shortage Areas*, <http://www.fldoe.org/core/fileparse.php/7766/urlt/CTSA1617.pdf>, at 4.

- Earn or hold a certification in computer science to receive a one-time bonus in the amount of \$3,000.
- Earn an applicable industry certification to receive a one-time bonus in the amount of \$1,500.

The bill requires the school district to report the educators who meet the eligibility requirements for the bonus. The bill requires the one-time bonus to be disbursed after the eligible educator teaches an applicable coding course for one full school year. The bonus may provide incentive to teachers to seek educator credentials, industry certifications, and related training to teach coding courses.

Support for Technology in the Classroom

The bill additional funding for technology. Subject to legislative appropriation and as determined by the DOE, a school district is eligible to receive a high-need district technology grant. The DOE must provide such grants based on a school district's high need, but must also consider an equitable distribution of funds based on geographic distribution of student population among the districts determined to have a high need. The additional funding may help school districts in providing students access to coding courses taught by qualified teachers.

The bill takes effect upon becoming a law.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

SB 1056 may likely impact certain teachers and school districts. Specifically, the bill:

- Provides a one-time bonus to a public school educator of:
 - \$3,000 if the educator earns or already holds a certification in computer science, and meets other specified criteria.

- \$1,500 if the educator earns an applicable industry certification, and meets other specified criteria.
- Requires school districts to offer coding courses. School districts that do not already offer coding courses will be required to add such courses and may also be required to hire additional qualified teachers.

C. Government Sector Impact:

The bill provides an appropriation of \$15 million in nonrecurring funds from the General Revenue Fund for the 2018-2018 fiscal year. The bill authorizes that the balance of any appropriation not disbursed by June 30 to be carried forward for up to three years after the effective date of the appropriation.³⁵

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Statutes Affected:

This bill creates section 1012.545 of the Florida Statutes.

This bill creates two undesignated sections of the Florida Statutes.

IX. Additional Information:

A. Committee Substitute – Statement of Changes:

(Summarizing differences between the Committee Substitute and the prior version of the bill.)

None.

B. Amendments:

None.

This Senate Bill Analysis does not reflect the intent or official position of the bill's introducer or the Florida Senate.

³⁵ Current law requires that the undisbursed release balance of any authorized appropriation, except an appropriation for fixed capital outlay, for any given fiscal year, which remains undisbursed on June 30 may be carried forward, but on September 30 must revert to the fund from which appropriated and must be available for reappropriation by the Legislature. Section 216.301(1)(b), F.S.. The bill instead carries forward such funds for three years, superseding the reversion requirement. Section 216.351, F.S.