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 Pre-K -12

BILL:	CS/SB 1344
INTRODUCER:	Education Pre-K -12 Committee and Senator Calatayud
SUBJECT:	Computer Science Education
DATE:	January 24, 2024 REVISED:

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Jahnke	Bouck	ED	**Fav/CS**
2.			AED	
3.			FP	

Please see Section IX. for Additional Information:

COMMITTEE SUBSTITUTE - Substantial Changes

I. Summary:

CS/SB 1344 establishes the AI in Education Task Force within the Department of Education (DOE) to evaluate the potential applications of artificial intelligence in K-12 and higher education and to develop policy recommendations.

Additionally, the bill requires the DOE to adopt and publish a strategic plan for a statewide computer science education program.

The bill takes effect July 1, 2024.

II. Present Situation:

Computer Science

The influence of computing is felt daily and experienced on a personal, societal, and global level.[1] Computer science, the discipline that makes the use of computers possible, has driven innovation in every industry and field of study and is powering approaches to many of the world's challenges.[2] Computer knowledge and skills are increasingly being recognized as

[1] K12 Computer Science, *K12 Computer Science Framework* (2016), available at https://k12cs.org/wp-content/uploads/2016/09/K%E2%80%9312-Computer-Science-Framework.pdf at 1.

[2] Examples of challenges include decreasing automobile deaths, distributing medical vaccines, and providing platforms for rural villagers to participate in larger economies. *Id.*

foundational for an educated citizenry as computer science is considered a central component of innovation, economic growth and employment.[3]

Computer science is also fundamental for student success. Multiple studies have shown that students who study computer science perform better in other subjects, excel at problem-solving, and are 17 percent more likely to attend college.[4] Although 90 percent of parents want their child to study computer science, only 57.5 percent of high schools teach computer science.[5]

Computer Science Courses and Instruction

Florida law defines computer science as the study of computers and algorithmic processes, including their principles, hardware and software designs, applications, and their impact on society.[6] Computer science also includes computer coding and computer programming.[7]

Foundational skills for computer science learning include problem solving, such as computational thinking, understanding and recognizing patterns, understanding and implementing sequencing, and understanding representation, meaning how computers represent data.[8]

Computational thinking, which refers to the thought processes involved in expressing solutions as computational steps or algorithms that can be carried out by a computer,[9] is essentially a problem-solving process that designs solutions that capitalize on the power of computers.[10] Although typically associated with computer science, computational thinking can also be applied in the classroom setting through lessons in core subject areas.[11]

Florida public schools are required to provide students in grades K-12 opportunities for learning computer science including computer coding and computer programming.[12] Such opportunities may include:[13]

- Instruction on computer coding in elementary and middle school; and
- Instruction to develop computer usage and digital literacy[14] skills in middle school.

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[3] Education Commission of the States, *State-level Policies Supporting Equitable K-12 Computer Science Education* (2017), available at https://www.ecs.org/wp-content/uploads/MassCAN-Full-Report-v10.pdf at 7.
[4] Code.org, *Why Computer Science*, https://code.org/promote (last visited Jan. 18, 2024). Code.org, *More Data and Talking Points for Advocacy*, *Why study computer science*, https://code.org/promote/morestats (last visited Jan.18, 2024).
[5] *Id.*
[6] Section 1007.2616(1), F.S.
[7] *Id.*
[8] K-12 Computer Instruction Framework Steering Committee, *K-12 Computer Instructional Framework* (2016), pgs. 183-198, available at https://k12cs.org/wp-content/uploads/2016/09/K%E2%80%9312-Computer-Science-Framework.pdf.
[9] *Id.* at 295.
[10] *Id* at 69.
[11] For example, in English language arts, students may be asked to analyze simple sentences and determine a framework for generating similar sentences, using pattern recognition and problem solving skills. Code.org, *Computational Thinking Lesson Assessment*, *available at* https://code.org/curriculum/course3/1/Assessment1-CompThinking.pdf.
[12] Section 1007.2616(2)(a), F.S.
[13] *Id*.
[14] Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills. American Library Association, *Digital Literacy*, https://literacy.ala.org/digital-literacy/ (last visited Jan. 19, 2024).

Elementary and middle schools may establish digital classrooms in which students are provided opportunities to improve digital literacy and competency; to learn digital skills, such a coding, multiple media presentation, and the manipulation of multiple digital graphic images. Students may also have the opportunity to earn digital tool certificates and certifications.[15]

Computer science courses must be offered to students in middle school and high school, including opportunities to earn industry certifications related to the courses.[16] Computer science courses and technology-related industry certifications that are identified as meeting mathematics or science requirements for high school graduation must be included in the Course Code Directory (CCD).[17]

The Florida Virtual School (FLVS) must offer computer science courses identified in the CCD. If a school district does not offer an identified course, the district must provide students access to the course through FLVS or other means.[18]

There are 72 middle and high school, as well as 2 elementary school, computer science courses currently identified in the CCD.[19]

Regulating Artificial Intelligence in Education

Federal Action

The recent surge in the use of generative artificial intelligence (AI) applications has prompted discussions about the role of this technology in the field of education. In fall 2022, the White House Office of Science and Technology announced[20] a series of steps to address the rise of AI-driven tools across a variety of sectors.[21] The United States Department of Education (USDOE) was charged with developing guidance and recommendations for the use of AI in teaching and learning. The USDOE published the report[22] in May 2023 with guidance and recommendations focused on the use of AI to:[23]

- leverage automation;
- support education systems, teachers, and classroom planning;
- interrogate data and examine inequities; and
- protect student privacy and assess student learning.

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[15] Section 1007.2616(5), F.S. *See* s. 1003.4203, F.S.
[16] *Id*.
[17] Section 1007.2616(6), F.S.
[18] Section 1007.2616(3), F.S.
[19] Florida Department of Education, *Florida Course Code Directory Computer Science Course Information 2023-2024*, *available at* https://www.fldoe.org/core/fileparse.php/7746/urlt/2324CompSci.pdf.
[20] The White House, *Fact Sheet: Biden-Harris Administration Announces Key Actions to Advance Tech Accountability and Protect the Rights of the American Public*, https://www.whitehouse.gov/ostp/news-updates/2022/10/04/fact-sheet-biden-harris-administration-announces-key-actions-to-advance-tech-accountability-and-protect-the-rights-of-the-american-public/ (last visited Jan. 18, 2024).
[21] Education Commission of the States, *State Information Request AI Regulation Policies* (Dec. 12 2023), *available at* https://www.ecs.org/wp-content/uploads/State-Information-Request_AI-Regulation-Policies.pdf.
[22] United States Department of Education, Office of Educational Technology, *Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations* (May 2023), *available at* https://www2.ed.gov/documents/ai-report/ai-report.pdf.
[23] *Id*, at 5.

The report notes several desired national research and design (R&D) objectives, such as, "creating and studying effective programs for AI literacy for students, teachers and educational constituents in general, including literacy with regard to the ethics and equity issues specific to AI in educational settings."[24]

State Action

A few states are in the early stages of developing policies and guidance related to AI in education.[25] In January 2024, the North Carolina Department of Public Instruction became the fourth state education department to issue guidance to its schools on the use of AI technology.[26] Executive orders have been signed by the Governors in seven states to establish task forces to recommend or establish standards and policies regarding the use of AI in education.[27]

III. Effect of Proposed Changes:

CS/SB 1344 creates s. 1003.4202, F.S., to establish the AI in Education Task Force (task force) within the Department of Education (DOE), which must provide administrative support. The purpose of the task force is to:

- Evaluate the potential applications of artificial intelligence (AI) in K-12 and higher education.
- Develop policy recommendations for responsible and effective uses of AI by students and educators.
- Create a definition for the term "artificial intelligence".
- Identify workforce needs related to AI, computational thinking, and computer science.
- Provide policy recommendations to ensure that the state develops education and workforce training programs that align with changing industry needs.

The bill provides the following definitions:

- "Computational thinking" as the thought process involved in expressing solutions as computational steps or algorithms that can be carried out by a computer.
- "Computer science" as the study of computers and algorithmic processes, including their principles, hardware and software designs, applications, implementation, and impact on society, and includes computer coding, computer programming, computational thinking, robotics, cybersecurity, artificial intelligence, machine learning, computer networking, and physical computing.

The bill establishes the Commissioner of Education as the chair of the task force. Other members of the task force must be appointed by the Governor by October 1, 2024, as follows:

- A representative from the State Board of Education (SBE);

[24] United States Department of Education, Office of Educational Technology, *Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations* (May 2023), *available at* https://www2.ed.gov/documents/ai-report/ai-report.pdf, at 51.
[25] Education Commission of the States, *State Information Request AI Regulation Policies* (Dec. 12 2023), *available at* https://www.ecs.org/wp-content/uploads/State-Information-Request_AI-Regulation-Policies.pdf.
[26] EdNC, *N.C. DPI releases guidebook on the use of AI in schools*, https://www.ednc.org/n-c-dpi-releases-guidebook-on-the-use-of-ai-in-schools/ (last visited Jan. 18, 2024).
[27] Education Commission of the States, *State Information Request AI Regulation Policies* (Dec. 12 2023), *available at* https://www.ecs.org/wp-content/uploads/State-Information-Request_AI-Regulation-Policies.pdf.

- A representative from the Board of Governors of the State University System;
- A representative from the Division of State Purchasing within the Department of Management Services with expertise in technology procurement and data privacy standards;
- A representative from the Office of the Attorney General;
- One school board member and one district school superintendent, each representing a rural school district, a suburban school district, and an urban school district, respectively;
- A school district educational technology director;
- Faculty in this state with expertise on AI, educational technology, or ethics from a public college, a private college, and a community or technical college, respectively;
- Educators from one public school, one public charter school, and one private school in this state; and
- Leaders from three industry sectors in this state directly affected by developments in AI.

The bill requires the task force to meet at least four times per year beginning January 1, 2025, and to complete its work within one year. Upon completion, the task force must submit recommendations to the Governor, the President of the Senate, and the Speaker of the House of Representatives. The bill specifies that all meetings must be open to the public.

The bill requires the task force to do all of the following:
- Evaluate the current state of AI technology and its potential applications in K-12 and higher education.
- Assess the ethical, legal, and data privacy implications of AI usage in education.

Additionally, the bill requires the DOE to adopt and publish a strategic plan for a statewide computer science education program by February 28, 2026, which must include, at a minimum, all of the following:
- A statement of purpose describing the objectives or goals the DOE will accomplish by implementing a computer science education program, the strategies by which those goals will be achieved, and a timeline for achieving them.
- A summary of the current state landscape for K-12 computer science education, including the diversity of students taking these courses.
- A plan for expanding flexible options to license computer science teachers, which may include approval codes technical permits, ancillary licenses, and standard licenses.
- A plan for expanding computer science education opportunities to every school in the state by the timeline established within the statement of purpose.
- A plan for defining high-quality professional learning for teachers to begin teaching computer science.
- An ongoing evaluation process that is overseen by the DOE.
- Proposed rules that incorporate the principles of the strategic plan into the state's public education system as a whole.
- A recommended long-term plan for implementing a requirement that every K-12 public school and public charter school employ at least one certified or endorsed computer science teacher or one career and technical education teacher trained in computer science.
- A plan to ensure long-term sustainability.

The bill requires the SBE to adopt rules regarding the task force and strategic plan provisions created in the bill.

The bill takes effect July 1, 2024.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

D. State Tax or Fee Increases:

None.

E. Other Constitutional Issues:

None.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

None.

C. Government Sector Impact:

None.

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Statutes Affected:

This bill creates section 1003.4202 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.)

CS by Education Pre-K -12 Committee on January 23, 2024.
The committee substitute removes from the bill provisions related to computer science instruction and expanded eligibility for financial incentives related to computer science training and credentials. The bill retains provisions in the bill related to the AI in Education Task Force and the strategic plan for a statewide computer science education program, with the following modifications:

- Maintains the scope of the task force to identify workforce needs to artificial intelligence and adds computational thinking and computer science to the scope.
- Includes the definition of "computational thinking" and "computer science" relating to the scope of the task force.
- Changes the date the strategic plan must be adopted and published from October 31, 2025 to February 28, 2026.

B. Amendments:

None.