



INTRODUCING THE K–12 COMPUTER SCIENCE FRAMEWORK, A MILESTONE FOR CS EDUCATION

Committee of computer science organizations releases framework to inform implementation of computer science education throughout US

Monday, October 17, 2016--The Association for Computing Machinery, Code.org, Computer Science Teachers Association, Cyber Innovation Center, and National Math and Science Initiative are pleased to announce the launch of the K–12 Computer Science Framework. The framework is intended to inform the development of standards, curriculum, and computer science pathways, and also help school systems build capacity for teaching computer science.

A webinar about the Framework will be held on Wednesday, October 19, at 12 PM Pacific / 3 PM Eastern. Visit <https://www.youtube.com/watch?v=wmxyZ1DFBwk> for more details and to watch the webinar on the 19th.

Developed through partnerships with states, districts, and the computer science education community, the K–12 Computer Science Framework is a significant milestone for computer science in the United States. It promotes a vision in which all students critically engage in computer science issues; approach problems in innovative ways; and create computational artifacts with a personal, practical, or community purpose. It is important to note that the framework is not a set of standards; instead, it is a set of guidelines put forth by the community that can inform standards, curriculum, and many other supports for computer science education.

A number of corporations, nonprofits, institutions, technology professionals, and notable members of the computer science education community have announced their support of the framework, including Google, Amazon, International Society for Technology in Education, Project Lead the Way, Southern Regional Education Board, New York City Department of Education, and professors from universities such as Duke, Harvard, and Stanford. A full list of supporters is available at <http://k12cs.org>.

“The K–12 Computer Science Framework not only includes technical concepts about computing, but also stresses the importance of creating an inclusive culture in the field, promoting collaboration among students, and communicating effectively about technology,” said Mehran Sahami, the Associate Chair for Education in the Computer Science department at Stanford University. “In this regard, the framework provides skills that generalize beyond computer science while also giving students an understanding of fundamental computing concepts that will serve them well in whatever career they choose to pursue.” Sahami also co-chairs the Association for Computing Machinery Education Board and Education Council.

As computing has become an integral part of our world, public demand for computer science education is high. Unfortunately, the opportunity to learn computer science does not match public demand. Most U.S. schools do not offer a single course in computer science and programming (Google & Gallup, 2015), and many existing classes are not diverse and representative of our population (College Board, 2016). State and local education agencies have begun to adopt policies and develop key infrastructure to support computer science for all students and have expressed mutual interest for guidance in this new frontier.

As a step towards solving issues of demand and diversity in this learning field, the K–12 Computer Science Framework illuminates the big ideas of computer science through a lens of concepts (i.e., what students should know) and practices (i.e., what students should do). These concepts and practices are designed to be integrated to provide authentic, meaningful experiences for students engaging in computer science.

For more information about the K–12 Computer Science Framework, including a list of practices and concepts, visit <http://www.k12cs.org>.

Frequently Asked Questions

What is the framework?

The *K–12 Computer Science Framework* illuminates the big ideas of computer science through a lens of concepts (i.e., what students should know) and practices (i.e., what students should do). The core concepts of the framework represent major content areas in the field of computer science. The core practices represent the behaviors that computationally literate students use to fully engage with the core concepts of computer science. The framework’s learning progressions describe how students’ conceptual understanding and practice of computer science grow more sophisticated over time. The concepts and practices are designed to be integrated to provide authentic, meaningful experiences for students engaging in computer science.

How can the framework be used?

The *K–12 Computer Science Framework* comes at a time when our nation’s education systems are adapting to a 21st century vision of students who are not just computer users but also computationally literate creators who are proficient in the concepts and practices of computer science. As K–12 computer science continues to pick up momentum, states, districts, and organizations can use the framework to develop standards, implement computer science pathways, and structure professional development. The framework provides a unifying vision to guide computer science from a subject for the fortunate few to an opportunity for all.

The framework’s chapters provide critical guidance to states, districts, and organizations in key areas of interest. Recommendations are provided to guide the development of rigorous and accessible standards for all students. Guidance for designing curriculum, assessment, course pathways, certification, and teacher development programs will inform implementation of the framework’s vision.

Why was the framework developed now?

As computing has become an integral part of our world, public demand for computer science education is high. Unfortunately, the opportunity to learn computer science does not match public demand. Most U.S. schools do not offer a meaningful course in computer science that includes coding/programming (Google & Gallup, 2015), and many existing classes are not diverse and representative of our population (College Board, 2016). State and local education agencies have begun to adopt policies and develop key infrastructure to support computer science for all students and have expressed mutual interest for guidance in this new frontier.

Who developed the framework?

The development of the framework was a community effort. Twenty-seven writers and twenty-five advisors developed the framework with feedback from hundreds of reviewers including teachers, researchers, higher education faculty, industry stakeholders, and informal educators. The group of writers and advisors represents states and districts from across the nation, as well as a variety of academic perspectives and experiences working with diverse student populations, including several current teachers.

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