Board Approves Plans to Expand Computer Science Curriculum to All Grades

June 10, 2015 (San Francisco) – The San Francisco Unified School District (SFUSD) plans to phase-in teaching computer science to all students, at all schools, from preschool to 12th grade.

Last night the San Francisco Board of Education unanimously adopted the resolution to expand Computer Science classes, citing that the knowledge and skills learned in those classes will help students understand underlying technologies they will face in any profession.

“Information technology is now the fastest growing job sector in San Francisco, but too few students currently have access to learn the Computer Science skills that are crucial for such careers,” said Board President Emily Murase. “We are proud to be at the forefront of creating a curriculum that will build on the knowledge and skills students will need starting as early as preschool.”

“Learning to creatively use computers and technology to solve problems cannot be optional for the next generation of San Franciscans. All students must have access to opportunities in Computer Science and coding, and our schools can make that a reality,” said Board Vice-President Matt Haney who led the charge for this resolution. “This is a bold but essential move to ensure all of our young people can live and thrive here in 21st century San Francisco.”

Creating a pre-K to 12 Curriculum
Approximately ten percent of schools nationwide offer Computer Science classes; and few large, urban school districts provide comprehensive Computer Science education to their students from pre-K to 12. Currently, no national, state, or local standards exist for Computer Science and the academic research in Computer Science education is quite limited. As such, a cohesive progression of Computer Science knowledge and skills does not yet exist.

SFUSD will work closely with the City and County of San Francisco, community-based organizations, technology companies, other private industry, and foundations to implement the plan. Implementation will also be in close partnership with SFUSD teachers and educators, and will include significant investments in professional development to ensure that current SFUSD teachers have the expertise, support and credentialing to teach Computer Science.

“There has been incredible support in the community to rally around how we implement this and, just as critical, how we fund this,” said Superintendent Richard A. Carranza. “We want our students to be able to live, work and thrive in San Francisco. This is part of what it will take to make that possible.”
The Salesforce Foundation is a major contributor to the expansion of computer science education in SFUSD.

**SFUSD’s Guiding Principles for Computer Science Education**

The resolution committed SFUSD to expand computer science education following a set of principles including:

- Computer Science involves more than just programming. Students must also learn about computers and algorithmic processes, hardware and software designs, their applications, their impacts on society, among many other important habits of mind;
- All students, from pre-K to 12, deserve access to rigorous and culturally meaningful computer science education and should be held to high expectations for interacting with the curriculum; and
- The field of computer science will continue to rapidly evolve in sometimes unpredictable ways, and as such, the plan for teaching computer science will also need the flexibility to continuously adapt.

**Equity and Access**

Decisions related to the computer science education, including pilots and rollout, will be guided by SFUSD’s commitment to equity, social justice, and closing the racial achievement and opportunity gaps.

Of the few hundred SFUSD students who took the Advanced Placement Computer Science exam in the spring of 2014, only 22 percent were female and only three percent were African American, Latino, or Native American. Teaching Computer Science at all grade levels will vastly increase exposure, and make the AP class a possibility to these under-represented students.

The SFUSD educators leading the effort to develop the new curriculum recognized that offering more Computer Science in high school would not yield success, especially in reaching the district’s diverse student population. By beginning in the youngest grades, the district can provide foundational knowledge and skills that will be increasingly critical in the 21st century to all students and increase and diversify the students currently pursuing Computer Science in high school, college, and career.

“We cannot affect change at the high school level by working only in the high schools. We have to start younger, with all children, so that we can normalize Computer Science,” said Jim Ryan, SFUSD’s Executive Director for STEM (Science, Technology, Engineering and Math). “Only then will it be something that we all do, rather than something that only a small subset of the population does.”

**Phasing-in**

While the curriculum is still under development, the resolution proposes a framework for the major concepts to be taught at each grade level.

For example, preschool age students will most likely be using blocks to build robots, to introduce the concepts of procedural thinking, cause and effect, decomposition of complex tasks, pattern recognition as well as the ability to notice similarities or common differences, abstraction and algorithm design and the ability to develop a step-by-step strategy for solving a problem.
Next year, 13 middle schools will be offering a course, reaching approximately 30 percent of middle school age students with 45 hours of Computer Science instruction, up from one percent of middle school students who participated in a computer science course in the 2014-2015 school year.

Given the uniqueness of each school and budgetary constraints, district staff predicts it will take several years before every student at every grade is learning computer science.

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