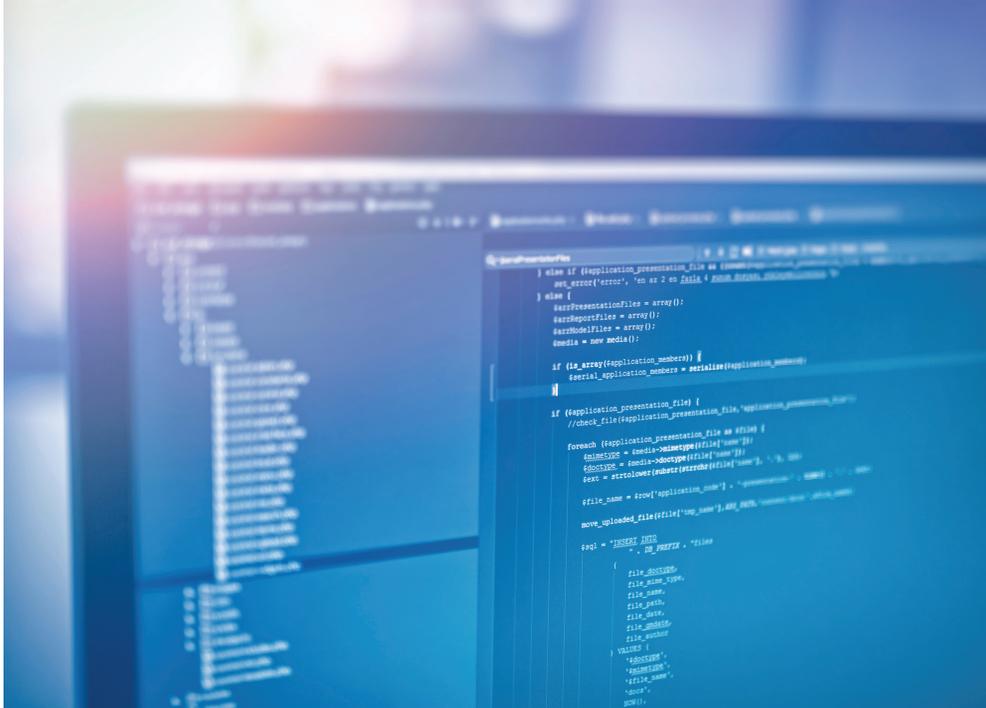


Electronic School



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Simple Logic

Coding and computer science can be the key to the American Dream

HADI PARTOVI SAYS HE'S LIVED the American dream. A first-generation immigrant, Partovi came to the U.S. from Iran, just as technology started its rapid growth into America's households.

Over the past two decades, the largely self-taught entrepreneur worked in top positions and served as an advisor/investor to tech companies that have become household names: Microsoft, Facebook, Dropbox, Airbnb, Uber, Flixster, and Edusoft, among them.

"I went from having next to

nothing to living a life that allows me to pursue all of my dreams," Partovi says. "What I realized was that the American dream is broken, because the best-paying careers in the country are not accessible to those who want them."

The careers he's talking about, not surprisingly, involve technology. Specifically, they involve coding and computer science, programs that typically have neglected in schools but now are making huge inroads thanks to the work of Partovi's nonprofit organization, Code.org. Today, just

four years after the organization was founded, 16 million students in grades K-12 use the Code Studio system. Code.org is the official provider of free curriculum training and professional development in two of the nation's three largest districts, New York City and Chicago, as well as many others.

And yet, Partovi and others say, many administrators and school boards do not understand the opportunity they are missing by not teaching computer science, one of the nation's fastest growing fields.

"Typically, educators don't think about computer science as a foundational science," he says. "Computer science is not a vocational language thing. Just like it's foundational to learn biology in high school to understand how every natural organism works, learning how software and technology works is equally foundational and equally important to anyone regardless of career."

COMPUTER SCIENCE DISCONNECT

Today, only 24 states allow students to count computer science classes as part of their high school science credits. While more than a half million computing jobs are unfilled in the U.S., just 42,969 computer science students graduated into the workforce in 2015-16.

Partovi says learning how to read and write code, defined as the process that make it possible to create software, apps and websites, is "an incredibly empowering skill to learn." Computer science, which is the study of the principles behind computers, is far broader.

"The downside of talking about computer science is that many people confuse computer science with computer skills," he says. "I've talked

to administrators who think they have a computer science class, but really they're teaching students how to use the computers and the software."

It may seem surprising to some school boards and administrators, but the disconnect between parents and educators on the value of computer science is borne out in a 2015 Gallup study, "Searching for Computer Science: Access and Barriers in K-12 Education." While 90 percent of parents surveyed believe computer science is "a good use of school resources, fewer than 8 percent of administrators believed that parent demand is high.

Google, which commissioned the study and has funded nonprofits such as Code.org to expand computer science education, called the disparity "shocking." Officials also cited concerns that teachers have not received appropriate training to teach computer science courses.

General interest in schools teaching computer science was confirmed in a separate survey conducted by Horizon Media several months later. According to that survey, 65 percent of Americans said most students would "benefit more from learning a computer coding language than a foreign language." Half of those surveyed ranked math and computer science as the most important subjects to learn after reading and writing. Another survey, conducted by Code.org, shows students rank computer science third behind performing arts and music as the class they want to take the most.

"Parents want it. Teachers want it. Students want it, but school boards and administrators are largely unaware of it, based on what we've found," Partovi says.

SIMPLE AND FUN

When Partovi started Code.org, he recruited Microsoft founder Bill Gates and Facebook founder Mark Zuckerberg, among other tech giants, to appear in a series of videos promoting the value of coding and computer science. He also got NBA star Chris Bosh and will I. am of the Black Eyed Peas to talk about its benefits.

The reason for the diverse group, he says, was to dispel myths that persist about what was — and still is in some circles — considered "a super nerdy thing." In the 1980s, when Partovi was in school, he used to avoid telling people about his interested programming because he was afraid of the social consequences.

"Learning how to use a computer is so much easier to do now than it was in the 1980s," he says. "I started on a Commodore 64, and you couldn't do it unless you knew how to learn code. Now, we have 3-year-olds using iPads, and it's largely because coding has become easier as the technology has improved. The misery level that goes into code has completely gone down, and now you can have all of the problem solving and exploration and creativity without all that pain. That's why it's become so much more fun for students."

The basic principles behind computer science have not changed, however.

"It really is about taking a simple 'If, then' statement, breaking the problem down into smaller parts, and writing a function for the smaller parts and procedures," Partovi says. "That's the logical part of computer programming and computer science, and these same concepts are still being taught, just in a drag and drop environment. My 7-year-old daughter is learning functions with

parameters, and she barely knows how to type. It really has become that simple."

"Simple" and "fun" are words Partovi uses often when he talks about the reasons educators should embrace coding and computer science.

"It's so much fun. It's fun to create things," he says. "The self-confidence students get from being able to make something on a computer and to get the computer to do what you want would make school so much more engaging for students. I think we're in a bit of a rut, knowing that school isn't fun. We're stuck with testing and the Common Core and this fun is missing. Computer science is actually fun and it's real science. It's not fluff. It helps you develop analytical skills and kids love it."

Partovi points to a simple economic reason schools need to teach computer science: future jobs.

"It's really easy to spell out," he says. "There are more than a half million jobs open in the field. Computer science is one of the best paying college degrees out there. It unlocks financial opportunities and represents a huge lost opportunity, especially for some of our most needy populations. It's logic. Simple logic, really."



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