Decoding computer science

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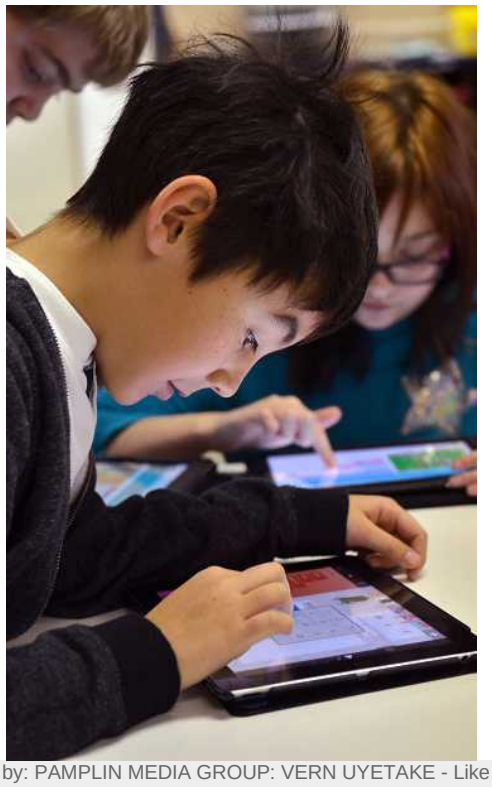
K-12 students spend an hour playing, learning code

How are you planning to celebrate Computer Science Education Week?

It may not rank in the national consciousness quite as high as certain other celebrations that take place this time of year.



by: PAMPLIN MEDIA GROUP: VERN UYETAKE - Like all fifth-graders at Stafford Primary School, Ty Park uses an iPad each day at school.

However, thanks to Curtis Nelson, students in West Linn and Wilsonville schools can mark the week of Dec. 9 by taking advantage of a program called Hour of Code.

"This is an opportunity to seize," said Nelson, who serves as the West Linn-Wilsonville School District's director of information services.

Hour of Code is meant to expose students to computer programming and coding. In WL-WV, it will roll out across the district, at all grade levels from kindergarten

"We haven't taken this and folded it into our core curriculum," Nelson said. "We've had so many initiatives that pinch class time. We didn't want to say, 'This is something else that you have to do.' This is just an opportunity."

He admitted to being "pleasantly surprised" by the enthusiasm with which WL-WV teachers and administrators received the idea.

"Some are doing it as a class activity; some are doing it after school," he said. Several schools didn't wait for education week to start, they introduced the activities to students as soon as they were available.

Free downloads, available at csedweek.org, offer users opportunities to write their first computer program. Each activity includes tutorials and is designed to allow users to succeed. More advanced options allow users to write code using JavaScript and other programming languages. Activities are designed for children as young as 4, and they can be accessed using a desktop computer, laptop, tablet or even smartphone.

There are even “unplugged” tutorials that don’t require a computer at all.

One of the online activities available is called Lightbot. Users press buttons to issue commands that move a robot around a simple board. At a glance, it looks like a game. As they play, though, students learn the basics of computer programming.

Once students become familiar and successful in the Lightbot environment, for example, they will be ready to graduate to a more serious program.

“With Lightbot, the next level would be Scratch programming,” Nelson said, referring to an online programming tool developed at MIT to teach programming to students.

“As you are thinking and your programming skills evolve, you go into higher language programming skills, like Python and Perl,” Nelson said.

by: PAMPLIN MEDIA GROUP: VERN UYETAKE - The fifth-graders in Tzaddi Bondi's fifth-grade class at Stafford are using iPads to access the programming lessons available during the Hour of Code this week. From left: Morgan Highland, Charlotte Gray and Amanda Myers.

Hour of Code fits neatly into the school district’s overall plan to ensure graduates have the skills they need to succeed.

“It’s a piece of our STEM/STEAM project,” Nelson said. The letters stand for the study of science, technology, engineering and math; the “A” in STEAM adds the study of art.

“Computer programming is one of the ways the ‘E’ in STEM comes to life,” Nelson said. “The ability to take multiple input and perspectives and build a program is valuable to students’ future.”

The number of available jobs in computer science fields is growing approximately three times faster than the number of computer science graduates available to fill them. By 2020, that could mean that up to 1 million jobs will go unfilled.

“There are going to be jobs out there. They’re good jobs,” Nelson said. “This can be what a student does for a career.”

Nelson himself is the best example of the way exposure to computers can influence a student's choice of career.

"If it wasn't for a seventh-grade teacher, I don't know if I'd be doing what I do," Nelson said.

He became interested in computer science when his seventh-grade teacher at Gardiner Junior High School in Oregon City asked for help setting up a classroom computer. At the time, computers were not commonly used, and although Nelson did not have any experience, he agreed to help and quickly became hooked.

"There ended up being a group of about five kids that poked and prodded at that terminal," he said. "We learned to program it to some degree, to play some games. ... We didn't realize we were learning physics."

Nelson said Hour of Code offers WL-WV students the same opportunities.

"Mr. Ingalls struck a match with me. That flame has burned for years. Some kids will get a match struck and they'll go on for years. Or not," he said. "Having an hour exposure to this is like having a great field trip. Where it goes from there, we'll have to see."

Computer Science Education Week is an annual program organized by the Computing in the Core coalition and Code.org. Learn more at csedweek.org.