Student Learning and Computational Thinking: How do you know they know?

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A University/K-12 Partnership to Increase Access to Engagement in College-Preparatory High School Computer Science
Research Leading to ECS

- What is computer science, anyway?
- Course offerings vary between schools
- Computing courses have no academic home
- Culture of low expectations around computing knowledge
- Counselors need information
- Teachers need support
- Students have interest!

STUCK IN THE SHALLOW END
Education, Race, and Computing

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The ECS Curriculum

Instructional Units

1. Human Computer Interaction
2. Problem Solving
3. Web Design
4. Introduction to Programming (Scratch)
5. Data Analysis
6. Robotics
ECS Student Enrollment

- 2008-2009 (pilot) = 306 students
- 2009-2010 = 922 students
- 2010-2011 = 1,377 students
- 2011-2012 = approx. 2,000 students
Students were asked to complete the following statement:

Because of Exploring Computer Science I am...
This is what they said
More in tune with how everyday things that effect my life are made and programmed
More open to pursuing a career in computer engineering
Learning how to be specific
Capable of learning and adapting to problems and learning its solution
Very happy
A computer scientist
explorer
More imaginative
100% going to major in computer science
Thinking more logically and always trying to find ways to get around and overcome obstacles in my way
MORE INTERESTED IN COMPUTER SCIENCE
Because of computer science I am now more experienced at something I didn’t even know existed.
Planning on getting a career in game designing
A young programmer in the making
More aware of the computer science world. I now know what it takes to be a part of it and how difficult yet fun it can be.
Now able to teach people like my mother more about computers, also myself
I now have patience. I’m not scared or shy to speak my mind or ask questions.
Able to recognize I am a problem solver and problems can be solved in a variety of ways.
Able to think outside of the box. Instead of just thinking everything just happens I know there is a lot of hard work that is put into everything that happens.
Quite a NERD and happy I got this class.
I’m more creative and I don’t give up when something that I don’t completely understand is difficult. I keep trying and see the results.
Smart ^.^
For More Information

More on ECS, including curriculum at www.exploringcs.org

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