Qualia

What are the best ways to increase the number of women in computer science?

November 15, 2012 | Author:Summer Allen, Graduate and Postdoc, Brown University

Even though college students today are very comfortable on computers, there is still a gap in the number of women getting computer science degrees. (Image: CDC)

In some of my other posts (like here and here), I've looked at factors that cause women to drop out of science careers—a phenomenon called the "leaky pipeline." In computer science, however, the goal is to get more women into the pipe to begin with.

Computer science has a branding problem (and it's gotten worse). When girls picture a room full of male programmers eating Doritos and drinking Mountain Dew, they don't see how they fit into this picture. This perception, along with other factors, has driven down the percentage of undergraduate computer science degrees earned by women from 37% in 1985 to just 18% in 2010. A recent articleby Ben Gose in the *Chronicle for Higher Education*looks at how different programs are trying combat this problem. This is an important issue, and so I thought I'd highlight some of the most interesting ideas here (but you should also check out the original article, which has even more good stuff in it).

THE GOAL: Get more women to take computer science courses in college.

- **SOLUTION 1**: Revamp introductory courses. Both Harvey Mudd College and the University of California Berkeley have redesigned their beginning computer science courses so they focus on the applications of computer science—like the ability to analyze biological data or create a sophisticated music site like Pandora. Both redesigns succeeded in increasing the number of women who took the courses.
- **SOLUTION 2**: Connect with other fields that are successful at recruiting women. Indiana University at Bloomington is encouraging talented women who didn't get spots in the super-competitive nursing program to major in informatics—a major they can use to enter nursing later or as a jumping off point for a number of other fields.
- **SOLUTION 3**: Money money money. The median starting salary for a computer science major is $56,000, second to only engineering. Money isn't a huge motivator for college-age women, but it is for single mothers. That's why Asheville-Buncombe Technical Community College is using a grant from the NSF to try to get older women to enter college and major in this lucrative field.
- **SOLUTION 4**: Make women already in computer science more visible. At Spelman College, presentations by the women's robotics team called the SpelBots attract first year students to check out computer science and engineering classes.
These solutions are great, and I hope other colleges and universities put similar time and dedication into revamping their programs to make them more attractive to female students. But as the article points out, college programs may

be too late for many women. It seems to be earlier—sometime in the middle school to early high school years—when girls make the mental switch to thinking "computer science just isn't for me."

Some organizations are dabbling in possible solutions to this problem. There are a number of science camps created by organizations as diverse as Microsoft and the Girl Scouts that target these younger girls by getting them involved in computer projects. This development seems positive, but others are more mixed. For example, the College Board is revamping the Advanced Placement course in computer science so it will be more of an overview course and have less of a focus on writing code. A trial of this new course in LA did succeed in attracting more female students, but I would prefer we give girls the confidence to take on Java rather than dumb down the course. Regardless, more must be done.

We need to prepare all kids—not just those lucky enough to enroll in a summer camp during those crucial middle school years or advanced enough to take an AP course in high school. There's no reason why computer courses in middle schools and high schools should be focused solely on typing skills or using Word. Today's kids are techno-natives. They can figure out how to use a program pretty quickly. What we should be doing in these classes instead: 1) teaching students how a computer works and 2) teaching them how to program. To do this we'll need to be training teachers to do these things too, but hopefully with stronger background knowledge, more girls (and boys) will have the interest and the confidence to take more computer science courses in college.

2 comments

REBECCA DUNCAN
November 30, 2012 - 10:44am
You hit the nail on the head with reaching out to girls at the middle school/high school ages, at least in my case. I was interested in computer science from a young age, but by the time I got to high school I gave up on pursuing it because I figured that if I hadn't taught myself to program by the time I was 12 (like some boys I knew) I would never make it. Luckily for me, I ended up going into biology and have found opportunities to work on my programming and computational skill set. But having computer science classes in middle school or high school definitely may have changed the course of my life.

ABIGAIL CEMBER
November 30, 2012 - 1:02pm
"Dumbing down" the AP course is insulting to high school boys and girls alike. I think the answer is simple: computer programming (the real deal-- Java or some other language!) should be a required course in high school, just like health-- I would argue that leaning the basics of coding (e.g. "this is a for loop") is at least as important for teenagers in the modern world as understanding options for birth control. As a graduating senior applying to biophysics PhD programs, I would say that my weakest area in entering this field will be not math or physics, but computation and model design. Weakest from lack of experience, but far from impossible, and quite interesting at that. The only reason that I see coding as "doable" for me (which I didn't, in middle school, despite my general confidence in math and science) is because I took the programming course in high school, at the wise encouragement of my dad. If everyone was forced to give subjects like programming and calculus a chance, the quantitative efficacy of our workforce, regardless of gender, would greatly increase.