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Bridging The STEM Talent Gap Is Not About Degrees, But Skill Sets

Posted Aug 16, 2014 by [Tony Portela](#)**1,352**
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Editor's note: *Tony Portela is co-founder and managing director of [onTop Technology Corporation](#), an IT services company.*

In 2013, there were 2.5 times as many entry-level, STEM-related job postings as there were STEM graduates, according to a study by [Burning Glass Technologies](#). The new [U.S. News/Raytheon](#) STEM index shows that student aptitude for and interest in STEM increased just 4 percent between 2000 and 2010, while data from the [National Science Foundation](#) show the number of STEM jobs grew 20 percent.

But what ails technology employers in the U.S. is much broader than a lack of degrees in computer science and engineering. A shortage of people with degrees in STEM fields is a problem, no doubt. But an even bigger problem is a shortage of people with the right skill sets.

That is a problem my colleagues articulated clearly in a [technology workforce study](#) commissioned by the Arizona Technology Council. 76.5 percent of companies reported it somewhat or very difficult to attract qualified computer scientists. Many reported particular difficulty in finding candidates with soft skills, including communication, creativity, high capacity to learn, adaptability and leadership. (While the study covered only Arizona employers, I can't imagine that the skills tech employers are looking for in Silicon Valley or Austin or Denver are much different.)

What do the “right skills” enable in IT?

The typical IT organization has its people running from one “emergency” to the next. They spend so much time patching holes that they don't have the time or the energy to think about fixing the problem that caused the holes. In contrast, people with the right IT skills don't see themselves as emergency responders. They understand that patching holes keeps the business going, but figuring out how to avoid the holes in the first place enables the business be more productive. They're the ones who get that IT is essential as a strategic enabler of business success.

At onTop we don't look for technical skills; we can teach people about the technology. Instead, we test candidates for their aptitude, for their ability to solve problems. We look for people with demonstrated trouble-shooting skills. And we have designed our teams to be fully cross-functional. There are no silos here. Every employee is part of the larger team, focused on a single purpose.

Developing IT candidates with the right skills

People with the kinds of skills I've just described don't just stumble upon those skills in college. And they don't necessarily learn them in engineering school. Learning to be a critical thinker and a problem solver is a skill that begins at the earliest age and requires teaching beyond the typical tech hard skills. So to ensure that we can meet our needs for right-skilled tech talent, we need: 1) to start teaching those right skills in kindergarten; and 2) to measure STEM skills beyond the number of computer science and engineering

degrees.

There are some promising initiatives on both fronts, including [ScratchJr](#) and [Code.org](#). I agree wholeheartedly with Code.org founder and CEO Hadi Partovi who [wrote](#), “We teach elementary-school students long division or how weather works because these are relevant, foundational concepts. At a time when most first graders can already navigate through websites and apps, why aren’t we teaching them how the Internet works or how to program a computer?”

What ScratchJr and Code.org do really well is teach kids a way of thinking that can be applied in many different fields. People have long accepted the connection between music and math. The same applies to coding. As Marina Umaschi Bers, director of the Tufts’ Development Technologies research group, which co-developed ScratchJr, [explained](#) it, “As young children code with ScratchJr, they develop design and problem-solving skills that are foundational for later academic success. And by using math and language in a meaningful context, they develop early-childhood numeracy and literacy.”

Another initiative is the [House STEM App Challenge](#), a nationwide competition for high school students. Students compete by creating, submitting and exhibiting their software applications for mobile, tablet or computer devices. Participating students have opportunities to engage with local community STEM educational partners who mentor them with their app development.

In a 2007 [report](#) on global competitiveness, Bill Gates said, “When I compare our high schools to what I see when I’ve traveling abroad, I am terrified for our workforce of tomorrow.”

If the technology community in America can’t figure out how to bridge the skills gap, someone else will.

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