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Data-driven dynamics in STEM

By [Kirsten Weeks](#)

Over the course of the next 17 months, every presidential candidate, left, right, and center, will make the case that our nation needs to make it a national imperative to address the skills gap crisis in STEM – Science, Technology, Engineering, and Math.

They will point out that by 2018, our nation will have 1.2 million, or 1.8 million, or 2.4 million unfilled jobs requiring technical skills. And they will argue, rightly of course, that we're falling behind China, India and Singapore in preparing our students for the new digital workforce. I wouldn't be surprised if one of them likened this to the race to put a man on the Moon.

The debate over STEM is over. No person in their right mind, let alone a candidate running for president would say that our nation is doing enough to educate our young people for careers in the emerging Internet of Everything economy.

But while there is violent agreement on the challenge, we are all asking what can we do about it, and how will we know if our efforts are working?

Take the company I work for, Cisco. We signed on to the US2020 challenge two years ago. US2020 is the White House-inspired initiative that called on companies to pledge that 20 percent of their U.S. workforce to spend 20 hours a year mentoring in STEM by the year 2020. We've also partnered with Million Women Mentors with a pledge that 5,000 of the students we mentor will be women and girls.

We made these commitments for a variety of reasons – a gut feeling that mentoring could help spark student interest in technology; the deeply held value of our company and our employees of the need to give back to the next

generation; and moving anecdotes of students who have developed close relationships with mentors and gone on to do great things in the industry.

But how will we ensure we are actually making a difference? For a data-driven tech company, this is a critical question.

So when US2020 came to us to ask if we wanted to partner with them in a pilot project to develop data on the value of mentoring, we jumped at it.

It started in April, when we brought 400 13-18 year-old students to our Research Triangle Park, North Carolina campus over the course of a week and paired them with 500 employee mentors, many of whom are engineers by training, or otherwise have significant technical skills.

The students represented diverse communities from around North Carolina's Triangle area, and many were girls. They all participated in technology demonstrations, "speed mentoring" with employees, and completed an Internet of Everything curriculum that asked them to come up with an idea that should be part of the next wave of digital development.

We surveyed them once before the program began, and a second time after the program ended. And the results were encouraging. Asked before: Do you know what it takes to get a job in STEM, 9.3 percent indicated strong agreement, and another 41.2 percent indicated agreement. Frankly, that's a very good starting place.

When asked after the curriculum was completed, however, the numbers jumped: 25 percent indicated strong agreement and 65.3 percent indicated agreement.

Now, we fully understand that these numbers represent a snapshot in time of excitement. Our challenge now is to determine how we continue the momentum and measure our impact in the long-term.

This month, I attended a summit in Washington hosted by My College Options, an organization that offers college guidance to high schoolers across the U.S. Years of collecting data on student interests as they move through high school has given My College Options a unique window into student perspectives on and intentions to study STEM subjects, and how those change as they move through the high school years. Recently, this data was made publicly available through a partnership with My College Options and STEMConnector, and is available on a county-by-county basis at shapingourfuture.org.

As we continue our mentoring at Cisco, we'll look to tools like shapingourfuture.org to monitor our impact. These data will help us assess whether we are changing student STEM perceptions and ultimately educational and career pathways in the counties where we focus our efforts.

Data helps us quantify the value of mentoring, when before there was only gut instinct and guesswork. And hopefully, it will help other companies also measure the value of mentoring. Mentoring alone will not solve our nation's STEM crisis. It needs to be part of a comprehensive strategy to change the way teachers teach and students learn. It begins with setting high expectations for our students, putting technology like Wi-Fi and tablets in every classroom in America. And it requires creative thinking and new curriculum to teach students the value of the STEM fields. Moreover, parents should stress STEM in the home, and afterschool programs should expose students to legos, robotics, and other hands-on activities.

But armed with real-world data, companies across the country should join US2020, Cisco, STEMConnector, Million Women Mentors and other corporations and organizations in making a major commitment to STEM. Students can't do what they can't see. So by opening their eyes to the incredible value and opportunities that a career in STEM provides, we hope that it will spark an interest in STEM that will hopefully last a lifetime.

Weeks is Cisco's director of Global Community Relations, which is spearheading the company's STEM mentoring efforts.

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