Is America's STEM Pipeline Just Clogged?

A controversial new report finds little need for expanded STEM guest worker numbers, but HR and talent experts say it's just not that simple.

By Tom Starner

In a controversial new report from the Economic Policy Institute, a Washington think tank, three college professors find little evidence to support expansion of high-skilled guest worker programs, as proposed in the immigration bill being debated in the Senate.

According to other HR and talent experts, however, the study may have some benefit, but misses several key issues about the current state of science, technology, engineering and math worker needs in the U.S. For example, it focuses only on the IT labor market, which is just one slice of the STEM workforce.

Primarily, the EPI study found that U.S. colleges and universities provide an ample supply of STEM graduates, a finding that runs contrary to what many business organizations are saying about the "talent gap" in America today and in the future.

In the study, titled Guest workers in the High-Skill U.S. Labor Market, Hal Salzman of Rutgers, Daniel Kuehn of American University and B. Lindsay Lowell of Georgetown University examined the IT labor market, guestworker flows and the STEM pipeline, and concluded that the United States has more than a sufficient supply of STEM workers available.

Key findings include:

- Guest workers may be filling as many as half of all new IT jobs each year.
- IT workers earn the same today as they did, generally, 14 years ago.
- Currently, only one of every two STEM college graduates is hired into a STEM job each year.
- Policies that expand the supply of guest workers will discourage U.S. students from going into STEM, and into IT in particular.

"The debate over guest-worker programs is largely based on anecdotal evidence and testimonials from employers, rather than solid evidence," says Salzman. "Our examination shows that the STEM shortage in the United States is largely overblown. Guest-worker programs are in need of reform, but any changes should make sure that guest workers are not lower-paid substitutes for domestic workers."

Salzman adds that despite a steady supply of U.S. STEM graduates, guest-workers make up a large and growing portion of the workforce, specifically in IT occupations and industries. IT employers look to guest-worker programs, he says, as a source of labor that is plentiful even at wages that appear to be too low to attract large numbers of the best and brightest domestic students.

If only things were that simple, says Dave DeLong, a talent management expert and author who is currently

researching a book on the "skills gap." While the situation within IT companies alone may be reflected in the EBI study data, DeLong notes, it remains a very macro look at STEM worker needs within the American economy.

"It is very dangerous to generalize about the impacts of the 'skills gap' across industries," says DeLong. "The study seems to draw conclusions about the lack of skilled labor in non-IT fields without taking a granular look at the real problems facing manufacturing, healthcare and the energy industries, for example."

DeLong adds that drawing conclusions from high-level data about the number of STEM college degrees is irrelevant to the manager in, say, rural Pennsylvania who is trying to hire an IT networking analyst.

"For example, the EBI study seems to pay little attention to skill shortages caused by geography," says DeLong, an independent researcher with an appointment as a research fellow at the MIT AgeLab. He also believes the study ignores the fact that graduating with a STEM degree doesn't automatically make a young person employable.

"Having a STEM degree doesn't make them a good hire," he says. "Hiring managers have to take into account technical expertise, teamwork and critical thinking ability, and leadership skills. They also want to know that a potential hire will stick around if at all possible."

DeLong explains that STEM graduates often are looking for their next opportunity soon after being hired. They also may move into more lucrative positions in other segments, for example, STEM workers will get advanced degrees and wind up working on Wall Street.

Dan Afrasiabi, author of *Restart Entrepreneurial Immigration* and CEO at ARMInsight, a Portland, Ore., business software provider, says statistics don't tell the whole STEM talent gap story. For one thing, he says, STEM is a very broad category. As such, certain skills, such as specific types of software programming, are in enormous demand and graduating STEM workers may not have those skills.

"The U.S. can only benefit by increasing the supply of talented people, no matter where they come from," he says. "Clearly, companies would not want to go through the maze of bureaucratic programs to bring people into this country if they could simply fill positions at will."

Afrasiabi says this is especially true of smaller companies, which do not have the legal and financial resources to do so.

"As we all know, statistics don't consider everything, including those graduates who choose to pursue other careers, regardless of their course of study," Afrasiabi says.

Jim Thompson, president of JMJ Philip Group, an executive search firm specializing in the engineering, IT and manufacturing space, says that, over the last few months, his firm has taken a deeper interest in this topic to better serve its customers. His view is that, while he continues to see a reasonable amount of STEM graduates, there still isn't enough liquidity in the candidate market to give employers the ample amount of people to select from, so they "settle" for less than they want.

"We wanted to learn more about the decision-making processes of both the candidates and customers, and what we have learned is the problem is a mixture of the amount of STEM graduates coming out of the schools combined with the changing landscape of career aspirations," Thompson says.

Thompson echoes DeLong's observation that U.S. STEM graduates who may be naturally great at math, for example, will pursue other careers in areas such as finance because they see a quicker path to personal increases in earnings

based on their excellent quantitative skills. Thompson adds that his firm also has noticed that U.S. STEM graduates often price themselves out of the market. For example, someone with an engineering degree from a reasonably notable school will say they want $55,000-75,000 right out of college with no experience. While it often works with the top graduates, the rest of the people price themselves out of the market, he says.

"While they are on the job boards shooting their resume all over the place looking for a job, someone else picks them up in a completely different field taking them away from their engineering focus, leaving a void in the market," Thompson says, adding that his firm sees many people who never end up doing a job that their degree is based in.

"That first or second job out of college will shape someone's entire career," he says. "If you had to settle for a non-engineering role right out of college, you are now set on that path and it's hard to change."
Thompson also says STEM candidates often do not want to relocate, an often overlooked topic that is extremely critical to the notion of bringing in guest workers. He explains that if you're a computer hardware startup in Ohio and you need the talent pool from Silicon Valley, you can either try to get someone to work remotely, move your business to the Valley, or target someone who isn't concerned with where they live and can easily move, which is often those that work here in the United States on work visas.
Finally, Thompson says guest workers never ask much about "fast track management" programs or "how long before I can move up in the company?"

"They are often here to work at what they love," Thompson says. "They want to do that job and they focus on it. That's a powerful reason for employers to use them."

Washington, D.C.-based Matt Stevenson, a principal in Mercer's Talent Practice specializing in workforce analytics and planning, also says U.S. STEM graduates don't always end up in a STEM career, opting instead for Wall Street and other more lucrative professions. He also believes that U.S. STEM graduates are more prone to change jobs, which is a downside for talent-strapped employers.

"A guest worker provides the added benefit of knowing that they will stay a bit longer than a year or two," he says.

Stevenson says, if you look at what employers have done to try and boost STEM worker talent, it would belie the EPI study findings. For example, he says, Microsoft was very up front about setting up research centers in Africa, China and other global locations because they could not get the right home-grown talent to meet those needs. Microsoft, in fact, has launched what it calls its National Talent Strategy, an initiative it believes will help secure U.S. competitiveness and economic growth by pushing necessary changes into the STEM education pipeline with the goal of increasing homegrown STEM talent.

For employers and HR executives, Stevenson says the main takeaway from the EPI study is that there is a lot more to it than the raw supply of STEM graduates. For example, there also is the type of STEM work being offered.

"Some STEM jobs are interesting and some are very boring," he says. "For the latter, employers may have to bring folks in from the outside because U.S. STEM graduates won't do it. While there may be a critical mass of STEM graduates, they don't always want to do the jobs that are being offered."

In a related area, employers looking for STEM professionals may need experienced workers, which is not what they will get with recent graduates. Of course, as talent-management expert Peter Capelli of the Wharton School and others have said, companies are not blameless and need to do more to train and develop U.S. talent.

"Right now, it's a supply and demand situation," Stevenson says.

Dave DeLong says that like many things in life, the STEM worker talent scenario is complicated. It can't be reduced to a single study that really only takes a macro perspective.

"To generalize about Silicon Valley's needs and compare it to an employer in central Pennsylvania or North Dakota just doesn't work," he says. "You have different markets and different talent needs and resources to get those needs met. The study is focused on IT talent needs in very high-level sectors, places like Silicon Valley or Austin, Texas. These locations do not have the same problems as more rural areas or less IT-oriented industries."

In the end, DeLong and Afrasiabi both mention that, apart from geography, the EBI study misses the mark because it does not differentiate between large and small-to-mid-sized employers. For the latter, finding STEM talent is a much bigger challenge for a variety of reasons, including salary, location, etc.

"This is a great example where macro data clashes with day-to-day, on the ground experience," Delong says. "I don't dispute their data, but to me it doesn't play out in daily experience.

"Employers may not be investing enough in training. They may want 'ready-made' workers, so they are not totally blameless," he says. "The truth about it, as always, is somewhere in between."

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