



## Outsourcing the Future?

***Two Duke scholars say U.S. could be outpaced in graduating higher-degree engineers.***

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**By Marisa Taylor**

It's the favorite gloomy warning of politicians and educators: the United States is falling behind China and India in math, science, and, thus, high-tech jobs. Should we be forcing kids to do their math homework? One U.S. scholar said it might be too late for that.

Entrepreneur and scholar Vivek Wadhwa argued that, instead, the U.S. must focus on graduate-level engineering programs to stay competitive and avoid losing high-skill jobs.

As an executive-in-residence at the Master in Engineering Management program at Duke University, Mr. Wadhwa has conducted a series of studies on engineering graduates and outsourcing.

He concluded that the biggest problem facing America is that policy makers are focused on K-12 education when they should be working on graduating more Master's- and PhD-level engineers. "The fact is that even if we fix our K-12 system, it will be 15 years before we see any benefit," he explained. "And that is 15 years too late."

Mr. Wadhwa predicted that cutting-edge R&D projects will start to move to India, much in the way that manufacturing in China has undercut ever-larger chunks of U.S. industry. To keep those jobs in the U.S., higher-skilled engineers are needed. During a recent trip to India, he said, he was blown away by the innovation he saw at companies like Hindustan Computers Limited (HCL). "Give it five years, and you will see a wave of outsourcing of critical research and design jobs going to India," he said.

With Gary Gereffi, director of Duke's Center on Globalization, Governance and Competitiveness, Mr. Wadhwa analyzed data on graduation rates of engineers in the U.S., India, and China and published the results in a recent study titled "Where the Engineers Are."

Their research did dispel one common fear: that the U.S. isn't graduating enough engineers compared to China and India. Commonly-cited statistics show that the U.S. is producing 70,000 engineers versus 350,000 from India and 600,000 from China. In fact, because the word "engineer" translates differently in China and India and could signify anything from a software engineer to an auto mechanic, the actual numbers of undergraduate-level engineers in the U.S. is very competitive.

Yet the authors did conclude that the graduate level is where the U.S. needs to worry. Add to that the strengthening economies in China and India, and the U.S. could see a trend in engineers with graduate degrees—of whom 40 to 50 percent are foreign-born—going home. More Americans need to get into those programs, he said.

Mr. Wadhwa himself was among the first to turn to outsourcing to cut costs. After coming to the United States from India for an MBA, he formed two software companies and started to outsource the programming in the early 1990s, first to Russia and then to India. Later, as an engineering professor, he heard his undergraduate students voice fears about losing their jobs to the trend he helped pioneer.

Some education experts are more sanguine. James Plummer, dean of Stanford's School of Engineering, said U.S. universities offer a top-notch education and attract the best and brightest from around the world.

"It's certainly clear that the outsourcing that we've seen over the last decade or so will continue," he said. "[But] I don't think that necessarily bodes horror for us in terms of engineering manpower supply."

In the meantime, parents may have to twist their usual dinner-table argument. In his 2006 book *The World is Flat*, journalist Thomas Friedman recounts chiding his daughters: "Girls, finish your homework—people in China and India are starving for your jobs."