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Study: Tech outlook rosy Reverses data on new engineers

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David Ranii, Staff Writer

Duke University researchers have punctured the widely held belief that the nation is losing its technological edge because it is educating far fewer engineers than India and China, two rising stars of the global economy.

The researchers found that the United States actually is pumping out far more engineers than was thought, and China and India are producing far fewer.

Pushing aside the myth that the nation's education system is in pitiful shape when it comes to engineers isn't just a matter of pride. It indicates the United States remains a global leader in technology, which is crucial to the country's economy, said Gary Gereffi, a sociology professor and director of Duke's Center on Globalization, Governance and Competitiveness.

In addition, the study removes a potential deterrent to U.S. students interested in studying engineering. Some students might steer away from majoring in engineering if they feared that Asia is producing so many engineers that much of the work here would be sent there.

"We wouldn't want a mistaken perception to become a self-fulfilling prophecy," Gereffi said.

Gereffi and Vivek Wadhwa, executive in residence and adjunct professor at Duke's Pratt School of Engineering, oversaw a team of graduate students in Duke's masters of engineering management program who produced the study, with the help of a New York consulting firm, Katzenbach Partners.

The data released Monday are preliminary numbers, part of a larger study that hasn't been completed that will compare the number of engineering graduates in the United States and in developing nations. The complete study will be submitted to an academic journal. Gereffi said he is confident the numbers in the preliminary report won't change.

But the study is at odds with statistics that arose this fall in a report by the National Academies -- a group that encompasses the National Academy of Sciences and the National Academy of Engineering, among others -- and then were picked up by the news media. Duke's researchers said the Academies figures were grounded in fact but don't reflect apples-to-apples comparisons.

That report, according to a news release issued in October, stated that the United States produced 70,000 engineering graduates in 2004, compared with 600,000 in China and 350,000 in India.

Deborah D. Stine, director of the National Academies' study, said she hasn't had time to analyze the Duke study. But she agreed that the numbers cited in the news release, which she said

originated in Fortune Magazine, were flawed and therefore weren't included in the final version of the report. The final version contained revised data that still show the United States is behind India and China when it comes to graduating engineers.

Officials at Fortune had no immediate comment.

The Duke researchers arrived at data in the same ballpark, but not identical, at first pass. But the data became problematic after they examined the definitions of "engineering" and "graduate."

In India and China, figures for graduates of four-year programs and less-rigorous two-year and three-year programs were lumped together into a single number, while the U.S. numbers included only four-year graduates. The figures were obtained from the Ministry of Education in China and the National Association of Software and Service Companies in India.

Yes, China may have turned out 644,106 engineering graduates last year, but if you're talking about four-year graduates, the number shrinks 45 percent to 351,537.

India, meanwhile, graduated 215,000 engineers last year, but the number of four-year degrees was half that number -- 112,000.

"The quality of the engineers is at least as important as the quantity," said Gereffi. Four-year degrees, he said, are crucial for the problem-solving skills necessary for technological innovation.

In addition to overestimating the number of Asian engineering graduates, the number of U.S. graduates has been underestimated by almost half, based on data compiled by the Department of Education's National Center for Education Statistics.

The principal reason: The numbers included only graduates of traditional engineering disciplines. Add majors in computer science, electrical engineering and information technology -- which are also included in the data from China and India -- and last year's U.S. numbers swell to 137,437. That's more than India and, given that China has about four times as many people, more than China on a per-capita basis.

Staff writer David Ranii can be reached at 829-4877 or davidr@newsobserver.com.