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Study: U.S. Engineers Competitive Vs. China, India

China and India include graduates of two- and three-year programs in their statistics. And particularly in China, the term "engineer" is used more loosely than in the U.S., the study says.

By Sheila Riley, [EE Times](#)
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SAN FRANCISCO — U.S. engineers are holding their own, at least for now, compared with their counterparts in China and India. So concludes Duke University testimony presented this month to Congress' Committee on Education and the Workforce.

The testimony supports a [controversial study](#) released in December challenging the assumption that China and India are leagues ahead of the U.S. in engineering graduates.

The stats on 2004 graduates often have been given as 352,000 for India and 600,000 for China. The government's National Academies pegs U.S. numbers at 70,000. India has three times more people than the U.S., and China, four times.

But the numbers don't work in apples-to-apples comparisons, according to Vivek Wadhwa, executive-in-residence and adjunct engineering professor at Duke. "It's contrary to what everyone else is saying," said Wadhwa. China and India include graduates of two and three-year programs in their statistics. And, particularly in China, the term "engineer" is used more loosely than in the U.S.



Vivek Wadhwa

Looking at all computer science and information technology degrees from four-year schools in 2004, Duke originally came up with 137,437 engineering graduates for the U.S., compared with 112,000 for India and 351,537 for China. When a visiting Chinese scholar told researchers the actual numbers were much higher, they directly contacted 200 of the 400 Chinese engineering schools to get a clearer picture.

Most couldn't give detailed information. The 30 larger universities that provided 2004 data said they had a total of 29,205 graduates in fields they classified as engineering. The only clear conclusion reached was that Chinese engineering numbers are increasing, Wadhwa said.

But narrowly focusing on graduation rates ignores bigger issues, such as quality. China may be producing more engineers—a necessity, given its growing economy—but with a factory-like approach, he said.

And no matter what the numbers are, they don't necessarily mean more outsourcing.

The immigration reform bill in Congress is key. Supporters of its proposed annual increase of H-1B visas from 65,000 to 115,000 argue that it will lead to less outsourcing. When companies recruit at U.S. engineering graduate schools, they find that 50 percent or more of the students are foreign nationals, said Rodney Malpert, director of U.S. immigration for Phoenix-based law firm Littler Global.

If they stay in the U.S., capital and jobs stay, too. "It's very much in the national interest to keep these foreign nationals who graduate from U.S. universities here rather than have them work abroad," he said.

Rather than worry about outsourcing—a reality in any case—U.S. universities and industry should focus on which skills are needed, according to Wadhwa.

And employers should look hard at the salaries paid to engineers, he said. In Duke's case, 30 percent to 40 percent of its master's of engineering management program graduates accept jobs with greater salaries outside the profession.

There's yet another consideration, said Duke engineering school dean Kristina Johnson. Engineers need historical perspective and understanding of technology's public policy implications. "Whatever country does that first will create a citizenry that's able to address the problems of the world in a more holistic context," Johnson said.

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