

# INTERNET & TECHNOLOGY

## Fears Of China And India Swamping U.S. Engineers Could Be Overblown, Study Says

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India and China are producing plenty of engineers, but they may not be as big a threat to U.S. tech supremacy as previously feared.

Nor are U.S. engineering jobs in danger of being outsourced en masse to those countries, according to a Duke University study to be released Tuesday.

The report flies in the face of conventional wisdom, which holds that China and India are far outshining the U.S. in tech education. Everyone from Bill Gates to Newt Gingrich to Ted Kennedy has cited worrying statistics on the subject. But according to Duke, the problem is overblown.

It all comes down to the way people define engineers.

In 2004, India was thought to have had 350,000 engineering graduates while China had 600,000. That's compared with just 70,000 in the U.S., according to the nonprofit National Academies, which advises the federal government on science, engineering and medicine.

But Chinese and Indian engineers may not be as qualified as their U.S. counterparts, according to the Duke report.

Unlike in the U.S., graduates of two- and three-year programs in China and India are included in their engineer tally, says Vivek Wadhwa, a co-author of the study.

In China, engineers are defined especially loosely, he notes. They likely include such workers as auto mechanics.

When comparing the three countries and including all computer science and information technology degrees — but only those from four-year institutions — the picture changes.

Using those variables, the U.S. number topped 137,000 in 2004, according to the Duke study.

By those criteria, China had 352,000 engineering graduates in 2004. That's still a lot more than the U.S., but China has four times the overall population of the U.S.

The number in India, with three times the U.S. population, was 112,000.

There are other factors that diminish the position of India and China.

According to McKinsey Global Institute research, only 10% of the Chinese engineers — 35,000 — and 25% of the Indian engineers — 28,000 — are able to compete in the global work force.

Reasons for their inability to compete include job location, a lack of language proficiency and cultural factors.

So the idea that the U.S. will lose out to an overwhelming number of qualified foreign engineers is patently false, Wadhwa says.

Still, others say, the report shouldn't lull the U.S. into complacency.

"I would agree that the more innovative capabilities are not as immediately threatened by outsourcing and offshoring," said Thomas Koulopoulos, founder and president of the Boston-based research firm Delphi Group.

But China and India are moving quickly to deliver a higher-level engineering work force, he says.

"The concern is how do we plan for what India and China might look like in five years?" Koulopoulos said. The new findings "may give us a little bit of latitude to prepare for global competition at those higher levels, but not a reason to breathe a deep sigh of relief."

Even if China and India have fewer engineers than previously thought, outsourcing to those countries isn't likely to slow.

That could be bad news for some U.S. workers — especially lower-level engineers.

"Outsourcing creates a clear threat to certain professions, and it is likely that this trend will continue," the Duke report said.

Salaries of U.S. engineers remain far above their overseas counterparts. For the cost of hiring one engineer in the U.S., a company can hire 11 in India, according to an October 2005 National Academies report.

That means American universities have to make sure their engineers are especially useful, says Kristina Johnson, dean of Duke's engineering school.

"We have to prove that hiring a U.S. individual has the (additional value) to afford the additional cost," she said.