

## Engineering Success

**An entrepreneur turned academic argues that to compete globally, American institutions should act more like Indian ones.**

By [Barrett Sheridan](#)

Aug 12, 2008

Vivek Wadhwa has a controversial message for Americans worried about outsourcing and losing their jobs. His advice: learn from [India](#). An entrepreneur and successful businessman who's started two [software](#) companies, Wadhwa has spent the last three years as executive in residence at Duke University's engineering school, where he studies [globalization](#) and how America can compete in the face of low-cost labor in India, [China](#) and elsewhere. He spoke with NEWSWEEK's Barrett Sheridan about why he thinks India, which produces high-quality researchers despite low-quality schools, could be a model for the U.S. Excerpts:

**NEWSWEEK: Your [research](#) looked at a much-cited statistic that says China and India combined graduate 10 times as many engineers as the U.S. each year. So let me ask: Should we be scared? Do those numbers mean America is losing its competitive edge?**

The U.S. has many things to worry about, but the graduation rate of engineers is not one of them. Why? China's numbers are very large, but the quality is so poor that the vast majority are unemployable. They also classify a weird set of degrees as engineering; an auto mechanic could be called an engineer.

**So what are the true numbers?**

The [reported] numbers in China are about 500,000 versus about 150,000 in the U.S.A. India is under 250,000. But the trouble is these numbers are deceptive. I would discount the Chinese numbers by a factor of two or three to get rid of all the garbage. That would reduce China to about 200,000 real engineers. And only half of [graduating] Indian engineers are employable. Only now are you comparing apples to apples.

**Despite the quality problem, the Indian economy is doing quite well, even branching out into sophisticated technological research and development. How are they doing that?**

Just like private industry learned to adapt to India's weak infrastructure, they've learned to adapt to India's weak education system. Companies have developed the ability to train people from scratch, with leading companies able to train tens of thousands of people at a time and bring them up to world standards.

**What kind of skills do they leave with?**

Research and development in a whole variety of high-tech industries. Pharmaceuticals, aerospace, semiconductors, software, networking.

**So someone with a weak formal education could become a lab researcher discovering new drugs?**

Yes, exactly. You don't have to be a hotshot Ph.D. [The companies will] train them. Infosys has a new training institute that can train 13,500 people at a time. Engineering graduates get four months of mandatory boot-camp-like training, which means six days a week, 10 to 12 hours a day. And if you're a science graduate or an arts graduate, you get seven months of training.

**Is that also true for India's newly minted engineers?**

The quality is so variable between the universities in India that [companies] can't rely upon it, so they basically have to bring everybody up to the same level.

**Do you see anything parallel in the United States?**

No. In the U.S., if you go back to the 1950s and the 1960s, when you joined IBM, you'd get seven months of training, and then they'd put you through a year's worth of job rotation. If a new recruit joins IBM today, they probably get three days of orientation and then they're on the job, expected to hit the ground running.

**Does the U.S. have such a poor education system that we need to retrain workers, just like in India?**

We don't need it because of the educational system, we need it for the existing workforce. There is no problem with the output of our universities; it's excellent. There's no problem with them joining new companies, ready to work. What's happened here is that globalization has disrupted the existing workforce. Globalization is now shifting critical R&D jobs overseas. It's hitting entire professions—for example, the software profession. Right now entry-level software workers are at a disadvantage in the U.S. because the same job can be done more cheaply in India.

**But why retrain U.S. workers at all if it's less expensive to do it in India?**

The point I'm making is that we need to come up with a comprehensive strategy to [deal with] globalization. The mantra right now is that we need to fix K-12 and we need to teach more math and science and everything will be OK. I'm saying by all means improve education ... but the way you're going to compete globally is with the existing workforce—the people already out there, working for companies. Invest in training them. Learn from the way the Indians are doing it. The U.S. needs to adapt the same tactic here. Rather than closing the door on immigrants or constructing trade barriers—which will make us more like Cuba—we need to open up. But we need to adapt and invest in our existing workforce.

**Is this something that will be cost-effective for companies to do? Will the government need to take the ball here?**

This has to be a nationwide initiative. We need to come up with a policy that encourages companies to invest in their people. It can be tax breaks, it can be mandates. Just like with maternity leave ... why not get training leave? We should basically make companies allow

employees to take paid time off to improve their skills. And then we should have our community-college system and our universities provide the training.

**Telling Americans they need to learn from India might not sit right—the U.S. doesn't have a good reputation for admiring the policies of others. As globalization continues, is that mentality going to have to change?**

It will have to change. We have to hammer into the country the idea that the world has changed. The U.S. lead can't be taken for granted anymore. We could go the way of the British Empire. We have to take a hard look at ourselves and be proactive.

© 2008

<http://www.newsweek.com/id/152341>