Science education and research in India undergoing a quiet but potentially huge transformation

Hari Pulakkat, ET Bureau Dec 4, 2011, 03.34am IST

Tags: Sunday ET | National Science Foundation

As a specialist in earthquake engineering, Sudhir Jain finds Gujarat familiar territory. He had done extensive work in the state following the earthquakes and helped in reconstruction programmes. That was mostly when he was professor of earthquake engineering at IIT Kanpur.

Now he is on a different mission in Gujarat: to build an entirely new IIT at Gandhinagar. And he chose the assignment as much for his fondness for the state as for the opportunity to look at an old system with a pair of new eyes.

As a frequent visitor to Gujarat, Jain knew that things worked well there. The cities were clean and efficient and largely safe, and he could always find people who were eager to live in Ahmedabad. Spouses of professors could find jobs easily there and their children a good education.

"When building an institution it is important to be in the right place," says Jain. Many institutions started in small towns had foundered over the years because no one wanted to live there. In Gandhinagar, Ahmedabad's twin city, Jain could stop worrying about selling the location and start focusing on his job.

His job is to build an IIT from scratch, as one of the eight new IITs the government is building. Jain has lofty aims: to build an institution that will be among the top 20 in the world in 50 years. As a beginning, he wants the IIT to break free from many selfimposed rules and assumptions.

He could do this if he had some financial freedom, and so he is raising money through a foundation registered in the US. Jain makes his students learn non-engineering subjects, get a taste of society, and do several other things not usually attempted in engineering institutions. Says Jain: "My electrical engineers will understand society better than those of previous generations."

Reimagining IITs

The IITs have long been known around the world for their teaching but they have a poor reputation for research. In a recent study of the top 20 engineering institutions in the world, Thomson Reuters found that the IITs had the lowest number of citations per paper between 1999 and 2009; they had 3.57 citations per paper compared to 10.50 for Stanford University, the highest for any engineering institution. The new IIT directors and some of the old ones are now bent upon changing the research culture in India, which is also a good way of attracting talent.

Says Uday Desai, director of the new IIT at Hyderabad: "If you create a research ambience smart people will join." The fledgling IITs and other institutions in India are now trying to blaze a new trail. Like Jain, their directors go on fund-raising trips to the US, hire industry veterans to teach students critical skills, break down barriers between departments and network intensely with their colleagues in other institutions.

You could also see them trying to woo outstanding Indian scientists working abroad. "Post-independence, till today, we have got scientists who wanted to come back for family or nationalistic reasons," says K Vijay Raghavan, director of the National Centre for Biological Sciences (NCBS) in Bangalore: "Now we need to attract those who are doing excellent science but have no strong reason to come back." Indian institutions need them for a reason: the country's research and educational establishment is undergoing its biggest expansion since the 1960s. If everything works out, Indian science could be looking at a paradigm shift.