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Brand IIT: the people behind the image

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IITs have justly been ranked as the top educational institutions in India and Asia. A little known fact is that more than 80 per cent of their products live and work in India. The next stage is to restructure and reinvent IITs so that they can become world-class centres of research.

A FEW days ago, I went to have my passport renewed. After waiting quite a while in a horribly cramped room, I finally entered the PRO's office and presented my application. He immediately informed me that I had filled in outdated forms and followed the wrong instructions and would have to come back later with the correct forms. I was crestfallen and pleaded that I had downloaded the forms from the Ministry's website and could not afford to take too much time away from my work at the Indian Institute of Technology Delhi.

His expression and attitude underwent an immediate transformation. "Sir, please sit down. The website is outdated. It's not our fault. Here are the right forms. We can't afford to waste your time. IITs have done so much for our country." While I was filling in the forms at his desk, he expressed his unhappiness that so many of our students migrate to the United States and do not work for their own country. However, I was out of his office within 15 minutes with all the papers approved.

On my way home, I marvelled at how times have changed. Now brand IIT is recognised all over India and abroad and we can even get preference over others in government offices! However, some myths persist. Everyone believes most of our students go abroad and a majority of them take up management jobs. This is because very few people know the actual output of IITs and the career profiles of our alumni. We are generally known for the difficulty youngsters face in coping with our joint entrance exam (JEE) and the outstanding successes achieved by some of our graduates (B.Tech.) in the U.S.

What most do not know is that B.Tech. graduates constitute less than half the students trained at IITs and that the majority, in fact, are Masters and PhD degree holders. For example, over the years IIT Delhi has trained about 26,000 students of whom only 37 per cent graduated with a B.Tech., 53 per cent at the Masters level, and 10 per cent with PhDs. The profile is similar for all other IITs. It is this stress on postgraduate education that has helped IITs develop their reputation and expertise. It is this aspect that makes them different from other engineering institutions.

In the past few years, IITs have been ranked as the top educational institutions in India and Asia by national and international magazines. However, the only objective ranking of top 500 universities worldwide by research output has been done by Professor Nian

Cai Liu and his colleagues at the Shanghai Jiao Tong University in China. In this list, the only institutions to make it from India are the IITs and the Indian Institute of Science, Bangalore. So what makes us tick and what do our graduates actually do in life?

Detailed scientific studies of the graduates from IITs Bombay and Madras show that about 35 to 40 per cent of them proceed abroad for higher studies, and about a quarter return to work in India. This means that only about a quarter of our graduates settle abroad. The pattern is roughly similar for all IITs. Now, remember that less than half our products are B. Tech. degree holders and that about 60 per cent are Masters and PhDs. All indicators show that the proportion of our postgraduate students going abroad is less than that of those with bachelors' degrees. Therefore, it seems that the total number of our students settling abroad may be less than a fifth of our total production. In other words, more than 80 per cent of our products live and work in India. These studies also show that those who go abroad represent the whole class profile and not just the toppers. This is quite reassuring.

What do our students do after they leave the IITs? Of those who go abroad, a significant number are in management jobs. Some hold top positions in multinational corporations. But what is very creditable is that almost every engineering department in most major U.S. universities seems to have an IIT graduate on its faculty. A look at the almost 200 students honoured by IITs as their distinguished alumni is instructive. Of these, about half work in India and the rest abroad; and technical researchers and professors constitute a little less than half of the total. Of the researchers honoured, 40 per cent work in India. What is interesting is that almost 70 per cent of the managers honoured work in India and most head technical companies. Of the entrepreneurs honoured, a vast majority of them come from the IT sector and live in the U.S.

What is even more interesting is that IIT students occupy the top rungs of R&D or management positions in almost all technical companies in the public and private sector in India. Many even hold senior positions in PWD, the Railways, and the Army. This should not surprise as a Department of Science and Technology sponsored study showed that a majority of those employed in the R&D departments of the top 20 public and private sector companies were Masters or PhD products from IITs. Similarly, a significant proportion of those working as teachers in engineering colleges received their higher degrees from the IITs.

What is clear is that the IITs have played a major role in the technical life of India — and this has come from their postgraduate programmes. The importance of postgraduate programmes and the availability of generous scholarships are sometimes lost on those not knowing the facts behind the image of IITs. If these institutions had not given this kind of importance to research and postgraduate education, many of our faculty members, who are well known, would have never joined these institutions. Involvement in research keeps the teachers updated and this upgrades the quality of undergraduate education. Finally, if postgraduate science and engineering education was not free along with adequate stipends (not loans), most of our students would not have opted for a research career.

Interdisciplinary outlook needed

The vision behind the establishment of IITs was that they would become centres of world-class research. A dispassionate analysis would show that we have done better than most people think, but are not good enough yet. However, a foundation has been established and we have to build on it. Like all structures, what is above the ground must be different from the foundation in form as well as function. To move forward in the 21st

century, IITs will have to become much more interdisciplinary in their research outlook. This will require working with a much wider variety of professionals in the life sciences and social sciences. Leadership in research will require a much greater emphasis on theoretical work, as much of product development will be done in the secretive laboratories of large companies. Young faculty members will have to work in small tightly knit interdisciplinary groups in close interaction with national and international peer groups.

To achieve this objective, there must be a restructuring and reinventing of the IITs with a vision of the future, not the narrow immediate needs of today. And for this, there must be debate and discussion that captures the aspirations and dreams of the young Indian researchers in India and abroad.

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