

Online learning set for big leap



ENCOURAGING INCUBATION: Bhaskar Ramamurthy. Photo: S.S. Kumar

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*In the second and concluding part of his interview to The Hindu Education Plus, IIT-Madras Director **Bhaskar Ramamurthy** shares his thoughts with **Ajai Sreevatsan** and **Vasudha Venugopal** on online education, NPTEL usage and research initiatives.*

Are the IITs contemplating any new forays in the online medium?

The IITs are planning to offer an online master's degree for engineering college teachers. There is a lot of demand because there are enough people who want to make careers out of teaching engineering. And universities can't afford to give two years of leave to teachers so that they can go and do an M.Tech. We can step in and help. We are taking it up shortly. The time has come. And this will be one way in which we'll be able to address the shortage of teachers as well as the quality of faculty in engineering. National Programming on Technology Enhanced Learning (NPTEL: <http://nptel.iitm.ac.in/>) will be used, but we would also tap into globally available free coursework.

Are there any expansion plans for NPTEL? Open Courseware modules offered by Western universities have become remarkably popular. Is there a scope for the concept to grow and evolve here?

Well, Phase-II of NPTEL is the real thing. Phase-I was 250 courses and Phase-II is the remaining 800, which will go online this year. In the third phase that will be announced soon, the focus is going to be on usage. And there are certain trends that are now beginning to emerge. You know, you look at the success of the experiment that Stanford has conducted [Stanford Engineering Everywhere] with their computer science courses. But this is a new thing. Attempts in the past to use online material for certification have received very poor response. Massachusetts Institute of Technology (MIT) is also moving in this direction. They have set up a non-profit for certification of online learning. I think there is no reason why that can't happen in India as well. The government, at some point, will have to create a virtual university and issue degrees based on online instruction. In fact, I would encourage private entrepreneurs to run courses based on NPTEL content. If you can really ensure quality, I don't think anybody can stop you. The demand is so high.

You have always talked about increasing the number of people involved in research in the IIT. Has the situation improved over the last few years?

That fact that we don't produce enough Ph.Ds was something many of us recognised long back. But now, there is a conscious effort being made to increase the number of Ph.Ds. A sort of a steady target set now is that we must do 0.6 Ph.Ds per year per faculty member. Our current faculty strength is 500 and our target is to have 300 Ph.Ds per year. We are well enforced to do that. This year we have taken in 400 for Ph.Ds, the highest till now. There is a slight delay in the number of the target but we are getting there. Areas such as Computer Science and Engineering still do not get enough Ph.D students because they go abroad or get into good jobs. The salary structures are really attractive. Electrical Engineering also faces that problem, but there seems to be no problem getting research students in other areas.

Is the Indian environment getting conducive to absorbing research students? Is this the right time for students to explore the world of research, even if it is at the cost of rejecting high-paying jobs?

India is undergoing transformation, and the industry too is undergoing a change. Until recently, Ph.Ds were needed only in academic jobs, but now the industry is getting more open to having them. Earlier, the research opportunities were less in other colleges as well. But now, industries including

chemical, processing and materials absorb many Ph.D students. The automobile industry has been absorbing researchers in the last 5-10 years too. The IT industry, especially the MNCs (GE, IBM) have also been recruiting. But it takes time for the information to trickle down and influence the behaviour. A large number of academic institutions have been opened, so there should be no problem if you get your Ph.D done well.

Currently the time is right because even stipends have increased. Also at the level of the policy-making, people have understood the importance of research. The Kakodkar committee wants 10,000 Ph.Ds per year, and now we can produce up to 2500 Ph.Ds. Every professor will have a group of 3-4 Ph.D students to guide. About 5-6 will be great, but given our ecosystem, it will be difficult for now. Chemistry has a legacy of bigger research groups, not engineering. Also the intake has to be of high quality. Right now they come because they are interested. The best students are still going to the U.S.

What do you think about the quality of research? Is it largely based on imitation, and what about the nature of publishing in journals?

Nobody wants to tamper with the system, because no one knows of another system that can deliver in a better way or alternative way. That is how research is. The rule now is that you should publish in peer known journals. It sounds very suspicious that you publish only great papers. Even in the U.S., the university will have many faculty publishing regularly and some doing extraordinary work. But here too, the quality of publication in journals is also steadily going up. We are a poor country, so much money is spent on IITs and we must produce only quality. There is no proven model that works like that.

How is the IIT-M research park working out? You started out with the incubation model which really took off well. Will the research park also see a lot of association between companies and faculty?

There are basically three categories of research here. In basic research, a person is solving a good problem and is not worried about where it is going. Translational research changes the way a work is done and there is some business idea involved. Here is where patents and innovations start creeping in and the third is where societal impact takes place. There can be a visible societal impact or an indirect impact. In academic environment, we let the faculty decide. Usually we find that it is difficult to be good at creating societal impact.

Translational research requires locking between industry and faculty which is difficult to establish in a growing ecosystem like India. I am trying to midwife this. Every industry has its legacy. For instance, the automobile industry has invented itself on its own. What we are trying to do is to know what industries are doing. Some are doing it on their own while some have foreign partners which is good because then only we have to learn.

Some have become dependent on consultants. We are doing it systematically, identifying areas, forming faculty groups. The Research Park is part of the same game. If a company comes here, it means they have already figured out they can do something here and when it happens it removes a lot of barriers. I could still work with GE or an Indian company on some translational work.

Similarly, incubation is also new for us. We have done it for last 10 years, mainly driven by personal motivation. Some of it has also been successful. Earlier, the mindset was that anything involved with money was dirty, but today, the institute says “take a stake.” Still, we are removing ambiguities in policies, putting checks and balances in place, and moving in the direction of wanting to actually encourage incubation.

When do you see JEE going online?

We are giving multiple choice with bubbling on paper now, by which we are able to conduct the test for six lakh students at the same time. The infrastructure is minimal and there is no dependence on electric power. We need to scan the sheets but that is not a big issue. For going online, we need to have a ten times bigger database of questions and the test needs to be conducted over 30 days. We send our people now to conduct supervision and there is a good amount of honesty in the system. When we go online, we will have to trust franchises. If you are a true engineer, paper bubbling scores over online methods of testing. Tablets are coming, we can get away with problems of scanning. It is anyway purely an implementation matter.

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