

'Big divide between teaching and research... students get disillusioned, go to other courses'

In an Idea Exchange at The Indian Express office, KRISHNA N GANESH, Director, Indian Institutes of Science Education and Research (IISER), says research and teaching have to come together for science to flourish and that the recent Bharat Ratna to CNR Rao will certainly serve as encouragement for scientists in the country

SUNANDA MEHTA: Do you think that after the Bharat Ratna awarded to Dr CNR Rao, who incidentally is also your father-in-law, the attitude towards science, that has been a fairly neglected area in the country, will change?

The Bharat Ratna has always been given for individual excellence. In this case it has been given for his lifelong contribution to science. But yes it is definitely encouraging for scientists. I always say people who are scientists know Sachin Tendulkar, but Sachin's followers don't know who CNR Rao is. This Bharat Ratna will change that. But for scientists as a community, the last person in science that got this award was CV Raman. Kalam and Vishveshwarya were for technology. After Sir CV Raman this is the second Bharat Ratna for science. I hope a lot of youngsters will also be encouraged. Nobody will come to science to get Bharat Ratna, but it does give science a good image. Yesterday's Padma awards have further reiterated this. The founder director of IISER Trivandrum, founder director and present director of IISER Kolkata got Padma Shris. IISER itself has got three Padmas. R A Mashelkar was chairman, board of governors of two IISER Kolkata and Mohali and two more are on board of governors of IISER. But we have to do a lot more things for science. Even in press, when a sportsman gets a Padma Shri, it's a headline. But a scientist getting a Padma Shri is never so. Society depends on science and technology but it is in the background. Life is becoming more scientific, be it with mobiles or using computer. Without realising, we are actually employing science.

ANURADHA MASCARENHAS: What makes IISER different from other institutes?

IISER was created with a different purpose. The government did not want to make another degree-making college. In India, we are obsessed with degrees. Conventionally medicine and engineering takes away good people. But science has to evolve because without science we cannot create technology because for every new technology which comes, science has to come. If we don't do science today, technology won't come tomorrow. If we look at the education system abroad, the bachelor of science degree is at the top in main in university department, but in India we have it in college. But these teachers are not active in research. So they cannot year by year excite students with something latest from nature. So their teaching becomes outdated. They are not practitioners of research. Abroad, a Nobel Laureate in a university teaches first-year undergraduates. People join university because they have a fantastic faculty. In India it doesn't happen. Nobody joins a university because so

and so is teaching. So teaching and research have evolved together in western system. In India, in the last 60 years of policy, undergraduate courses and research has been bifurcated. All good research happens in CSIR laboratories, atomic energy, space etc and they don't teach at all. So there is a big divide between teaching and research. Hence lot of students get disillusioned and go to other courses. Those who can't get anything come to M.Sc and Ph.D where as brightest of the students should come to research.

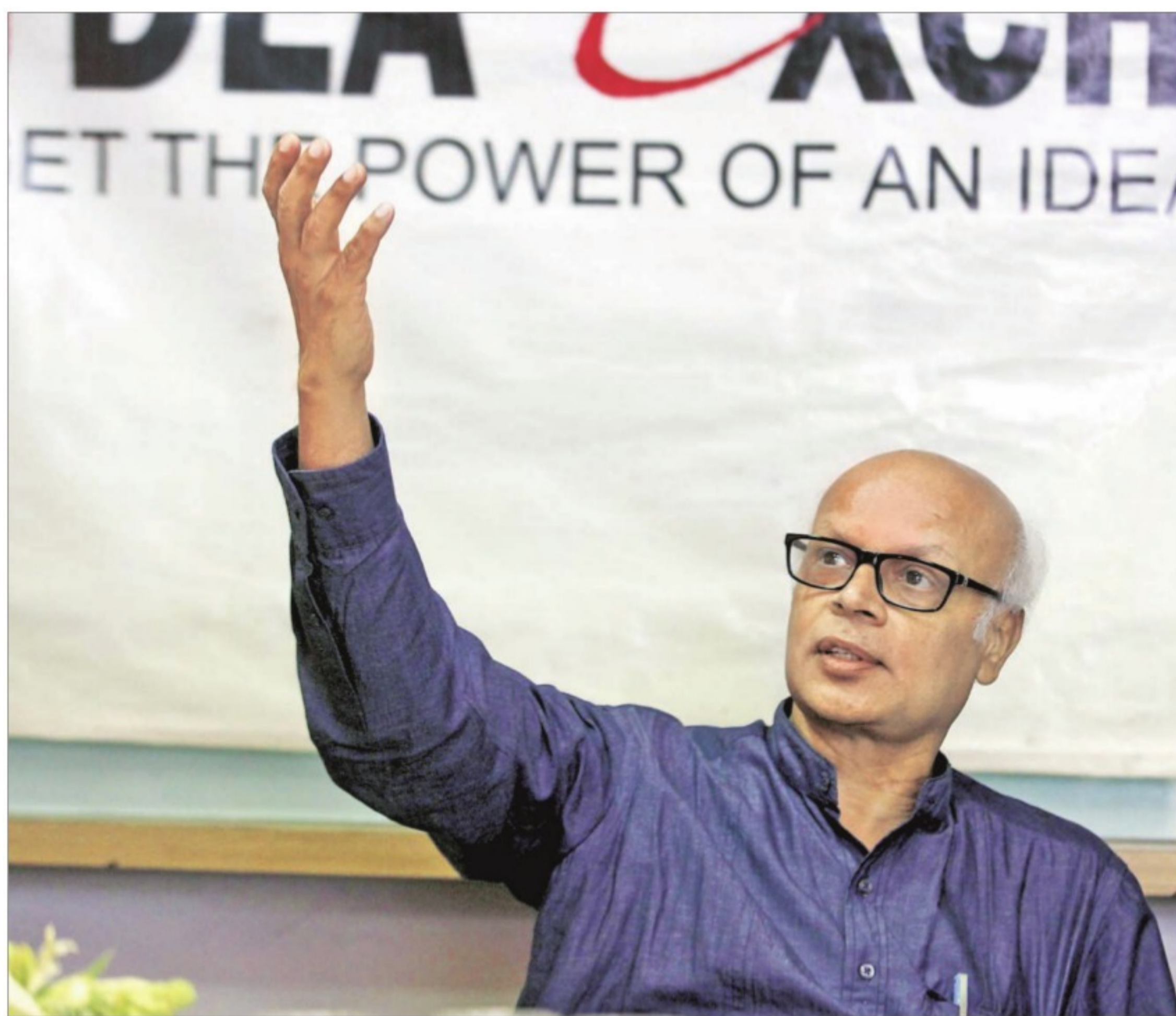
It was high time that educationists and policy makers see this contrasting situation in India and somewhere in 2005 the scientific advisory committee took the first decision to bring teaching and research together and that is how IISER was formed. So IISERs are not like any other institutions. So these are the institutions where UG teaching happens in research ambience. This was the first philosophy. Students who come after class 12th should actually be taught by people active in research. Second is interdisciplinary research. We have always been brought up in compartmentalised teaching. All future research areas are in interdisciplinary fields.

ANURADHA: How are you trying to promote courses?

For the first two years, they are taught everything. All are compulsory courses. Breadth is important. When you go to the next two years, depth is required. After two years, students are trained and can decide what they want to do. When they joined IISER, it's their relatives who tell them what to take up in specialisation. But after two years, they can make a conscious decision of what they want to do. Without worrying about the job prospect, they should choose their area of interest. In the next two years, they study specialised courses in depth. In the fifth year, they do research project. This can be done in IISER anywhere or abroad which is something not found in any parallel education. Some students even publish papers in journals. So by the time the student leave IISER, he has already had a publication to his name. The greatest happiness comes to a scientist, when their publication comes out in journals. And IISER students experience this when they are in their undergraduate course. In IT, engineering, management, students can get a pay package of Rs 2 lakh per a month. I tell them if you want to make money don't come to science, but good scientists are rich and in IISER, we will train you in a way that wherever you go you will be selected.

GEETA NAIR: How are the alumni doing?

Anybody who does science, goes to research or academics. They can't



IDEA EXCHANGE

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think beyond this. Teaching is the last resort. But now salaries are becoming attractive in these fields. Research requires sacrifice. Then as scientists we have also failed to project ourselves. In today's world, intellectual property, patent has become very important. Apart from science you need legal background, language background etc for this. Today we don't train our scientist in these. There is a shortage of patent scientists in India. So in the fifth year if we give them a small legal course, the student will create a niche for himself. Industry will want him if he gets proper training. Scientists can become good entrepreneurs. It is just that we are not trained to think like that.

Other important thing is journalism. Even in our mass communication studies, there is no specialisation in science. There is a need for scientists becoming journalists. All these research journals have become a big business now. There is a big demand for copy editors here. There are need for people who edit the articles in a scientific

way. India had 5,000 PHDs 15 years back and even now we have just 8,000. Chinese had less than 5,000 but now they are 20,000. Today we watch BBC, Discovery etc. But we don't have an equivalent channel in India. Hence we in IISER created a media centre. The students are made to make movies to explain a discovery to the common man. We have produced two documentaries one on Ramanujan, and one on S Chandrasekhar which were very well-received.

PRASAD JOSHI: How do you promote the courses and what is the response to courses? Are there any dropouts?

There is not much awareness about IISER among common people. Beyond UoP circle, I don't think anybody knows about us. We issue twice-a-year full page admission notices. There is also another reason the intake is very low. Now IISER Pune this year will be taking 200 students. It is designed just for 2,000 students. The general public may not know but in school level they know about it. We take the top 1 per cent students of all boards. We have 26 boards and ICSE CBSE etc. When they get into that top one per cent, the Board itself gives them a letter saying that they have been chosen for inspire scholarship which is Rs 5,000 per month which is again unheard of anywhere else. We send these notices to all the schools through district education centres etc. about IISER. We also have IITJEE qualified students but we are more happy with the top 1 per cent. IIT students come to us because they haven't got their choice of branch or choice of institute. First three years, we depended on IIT JEE. What we found was that they were not that happy. They used to compare themselves to their IIT counterparts. They had come with this 'pay package' men-

tal. Even then there were not many drop-outs. Last year we wanted to take 150 students, so we offered admission to 170 and we ended up with 145. But very few people join and drop out. They mostly opt for other colleges before joining. So after joining, the drop outs are less than one percent. Only those who haven't fulfilled course requirement have been asked to leave IISER and sometimes they get admission in 2nd year Bsc.

SUSHANT KULKARNI: When it comes to comparison between institutions abroad and in India, there is always a parameter about the Nobel prizes, field medals awarded to the institutes. Where do you think we are lacking? Also how does IISER ensure that they keep producing good papers?

Research now is become highly competitive, globally. Indians who have got basic training in India and have gone abroad and won Nobel prizes have done extremely well. In India we have to create an ambience for learning. In India, if we think a person is average, when he goes to Germany or other countries, he performs exceedingly well. More than anything else their whole eco system, their learning, course work, evaluation, everything is so good that you reach a higher level. In India it is the opposite, even the best student reaches nowhere. That is what happens at IISER, we don't want to remove the F grade also. In India we

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ANURADHA MASCARENHAS: Does it not get industry response?

Every other day you see advertisements by the government. They are putting in efforts. I was told in Korea, for one academic researcher, there are a hundred industry scientists. This is why Samsung and LG are able to come up with so many innovative products. That's a good model we can follow. This has to be brought in India. Industry may think that government is bureaucratic, but it is not so. I have been in MHRD, I had to go to Delhi only once for asking for money. Otherwise the government has become very liberal. The industry people have to have a different mindset. Other thing is confidentiality. We know what we need to tell and not tell about our research, the industry people need to trust us.

PRASAD JOSHI: What do you say about the role of the National Innovation Council?

They have started, they recognise several products and develop them. But scale is a problem. In India a lot of good things are happening in small places and small numbers but amplifying this is important. We require a huge scale-up. One or two isolated incidents happen and then we forget. Now there is more awareness. When foreigners come to IISER, they are amused by our programme. Every other day we have international delegations here.

A lot of our good people, or after BSc or MSc, go abroad. They must go experience different cultures, learn professionalism and come back. Our main concern is that good people come back after all of this, but when they do, we don't have enough opportunities to offer to them. IISER is the kind of institution that is better than some institutes abroad. We don't always go by the lowest tender.

What China has done is a fantastic thing. They send people abroad for five years and ask them to come back and give them fantastic opportunities. Atomic energy is mission-oriented. ISRO is mission oriented but now they don't know what to do anymore, because now we have liberated the economy. They have to find jobs for themselves.

There is an experiment I have tried to conduct at IISER and it has succeeded. There is something called a start-up grant. When a new person comes in to the institute, I have to give him some initial research money. I give a blank check. I don't know how well four or five years later, the government will fund science and research but you have to give them this kind of a platform.

RUSHIL DUTTA: You have been very critical of the Indian education system and spoken at length about how it forces students to choose certain streams and yet you choose to pool the top one per cent students from this faulty system?

How can I choose otherwise? If I take IISER, I get five lakh applications every year. I have to have some norms. Some times I have to draw a line. I have to go for top one percent. But after having taken them, things don't matter.

(Transcribed by Ardhra Nair)

REPORTER'S NOTEBOOK



TECH THAT

UNION AGRICULTURE Minister Sharad Pawar last week inaugurated the renovated state-of-the-art Chhatrapati Shivaji sabhagrah of the Pune Municipal Corporation (PMC), where monthly general body meetings are held. He

praised the work done as it was on the lines of facilities at parliament with a button facility for voting and CCTV recording. However, the facility of electronic voting was not used in the general body meetings held thereafter. When asked about it, municipal secretary Sunil Parkhi said that the facility is there but the corporators don't know how to use it so the old system of raising hands for voting has been continued. "A training session for corporators to use the facility, especially the electronic machine for voting, will have to be arranged before using it," he said. As if that was not all, the civic body is yet to use the biometric attendance and still uses the register book.

RIGHT TO INTERVENE

AN ACTIVIST was narrating his recent experience of 'file inspection', obtained under the RTI Act, in an educational establishment, where both the public infor-

mation officer (PIO) and the assistant were women. "Both the ladies were sitting right in front of me and discussing a range of issues loudly without bothering about my presence. It was very difficult to concentrate for me. The Direct Cash Benefit Transfer and calculation of subsidised LPG cylinders was one of the issues they were discussing at length. Both were having incorrect knowledge about procedures, and eventually I had to intervene by providing appropriate facts in order to close the discussion, for my benefit," he said with grin. He added that the file inspection lasted for nearly three hours, as against expected time of nearly two hours due to the 'courtesy' of the PIO and her assistant.

HANGOVER 4

THERE WAS much commotion and hilarity at a press conference for a film festival last week. The organisers could not decide whether to have it or not because

only a few reporters were present. But a few reporters showed up at the last moment and the conference kicked off with an interview of a Polish film director, whose film was supposed to be screened later that day. The director wore Wayfarers throughout the conference, and announced that he is still hungover from the previous night's party. While answering a reporter's question, he stopped and emphasised that he was too drunk to finish the answer. It was by far the most hilarious media interaction hosted in the city so far.

AUTO CORRECT

IT'S A FEAT to get to Pimpri within an hour even while driving oneself, and foolishness to expect it while travelling by public transport. So, when this reporter had to reach Pimpri from J M Road for an assignment within 30 minutes, she darted for the bus stop on F C Road and while still quite a distance

away, saw a bus for Pimpri zipping past. Getting really worried about when the next bus will be, she continued walking towards the stop when she saw another bus coming down. This time she ran, trying to race with the bus. With the traffic moving fast and her heart beating faster, I began to see there was no way of making it. Just then an auto pulled up close and the driver shouted at her to hop in. As soon as she did, he drove like a man on fire and reached two stops ahead just as the bus pulled in. Overwhelmed with gratitude, she took out some cash to give the driver, when he shouted, "No, no. You go catch the bus!" She eventually reached her destination in Pimpri just on time, while the auto driver made up for a 1,000 grouses against his comrades by his one act.

FOLLOW FLOP SHOW

IN THE recent DPDC meeting held under Deputy Chief Minister and Pune

guardian minister Ajit Pawar a very peculiar complaint came up in the midst of the assessment of development works in the district. The MLAs and MPs in the district had complained that district administration officials were never available for any follow-ups to check developmental works and even repeated follow-ups with them remained futile. "I am issuing a strict warning and those not heeding to the warning will have to ready themselves for disciplinary action," said Pawar, tired of the complaints. He announced that the next time he meets any elected representatives, such complaints should not come to him against any official. "Just do your work effectively," he urged the administration officials. He even told the MPs and MLAs to list out the names of the officials who were not available regarding any follow-up.

Contributed by Prasad Joshi, Ajay Khape, Joyce John, Anjali Jhangiani and Nisha Nambiar