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New Experiment in Indian Science

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Dr Prakash

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New Experiment in Indian Science

Science education and research in India is undergoing a quiet but potentially huge transformation. A quantum jump in public funding and a new team of institution builders are leading the charge.

Dr Prakash
Suryanarayan, former CEO of the Faridabad Biochase.

Bhan realised that India’s future was ‘bigger than the present’ and it had to be ready to grab its opportunities. The country clearly needed more institutions. But he also knew that the new institutions needed to be different from existing ones.

Bhan had clear goals: make India a world leader in vaccines, transform agriculture using bio-resources, and create socially relevant business models. Create the human resources and the knowledge to feed a $2-trillion biotech industry by 2020. Build clusters that link education, innovation, entrepreneurship and new business models.

The Licence Challenge

While at the All India Institute of Medical Sciences, Bhan had co-developed the rotavirus vaccine for children. Two companies had licensed the technology but nobody had been able to manufacture it yet, although the virus is a leading cause of death among children. It was no wonder that Bhan planned the new institutes with applications in mind. “We thought that we needed to create an environment conducive to end-to-end research,” said Sudhamshu Vrati, Bhan’s collaborator on the mechanical engineering with medicine, agriculture with climate science, instrumentation with biology. “We do not have many such people now.”

Strange Bedfellows

Those who conceived independent India’s major educational and R&D institutions immediately set them on two divergent paths: education and research. The IITs were the quintessential educational institutions. They focused on producing high-quality engineering graduates but not on doing research. The national laboratories, largely under CSIR, focused on research but did not teach undergraduate students. This dichotomy denied Indian students research experience till well into their PhD programmes. They also denied researchers the stimulation of working with enthusiastic undergraduate students.

Early last decade, influential Indian scientists started persuading policy-makers to start a series of science institutions on the lines of the IITs, with the difference that they would focus on both education and research. The government set up five ISERs in 2006. Each had a budget of Rs 500 crore for the first five years. They started operating from makeshift campuses while their own were being built. It was some-

Pune as a special place to work. In its short existence of four years, it has published nearly 150 papers in top journals. The ISERs have started attracting talent from older institutions. “It is easy for a new institution to provide the infrastructure and freedom that good scientists seek,” says ISER Thiruvananthapuram’s director, Eluvathingal Jemmis.

ISERs have fuzzy department boundaries. “We were setting up schools of research earlier,” says ISER Pune director K Ganesh. “Now I would rather set up departments like spectroscopy, surface science and systems biology that demand the application of several subjects.” ISER Mohali, the most advanced of ISERs in terms of building up its own campus, uses the social media for teaching and makes students design and own their experiments.

Rubbing shoulders with ISERs Mohali are two new institutes: the Institute of Nano Science and Technology (INST) and the National Agri-Biotechnology Institute (NABI). “There are no boundaries between ISER and INST,” says ISER Mohali director N Satyamurthy.

Scramble for the Best Minds

Chalasani Sengupta, an assistant professor at Harvard Medical School, keeps a close watch on the Indian scientific establishment. He had noticed that Indian academic institutions were at a loss to deal with the increasing number of resumes from scientists abroad. The directors wanted to hire the best scientists but seldom had the time to go through and investigate every resume the institution received. Sengupta then thought of a way out: a meeting of young scientists that heads of institutions in India could attend.

He started organising the Young Investigators Meeting in Boston from 2009. He also found sponsors from India. In three years he got 250 applications from young scientists, of which 125 were shortlisted. This year 60 scientists were chosen out of 250 applicants, and they made seven-minute presentations to 25 heads of Indian institutions. Then the directors briefed the scientists about their institutes.

Talent Moving Back

Of the 30 scientists who had made presentations in the first year, 27 are back in India. Several scientists got multiple offers from India this year. “I would not have known about the true opportunities in India without the meeting,” says Rituparna Sinha Roy, who has recently moved from Harvard Medical School to ISER, Kolkata.

Scientists abroad have been moving to India for a while due to various reasons, but a large number of them still stay back in their jobs abroad. “The best minds do not apply for jobs,” says Ganesh. “You have to seek and find them.” Directors of labs are thus on hard-seat tours of the US and Europe, just like Vikram Sarabhai and others did in the 1960s.

Senior scientists think hard and hard before returning. It took four years for NCBs to convince S Ramaswamy to come back from Iowa University as the CEO of C-Camp. “I finally decided that I could make a difference here and not in the US,” says Ramaswamy.
At IITs, Placements Trump Slowdown

Facebook, Google, Sony & Rio Tinto rush to campuses with 10-20% higher salary packages

The top offer thus far is an annual package of ₹7.5 lakh ($150,000) from social networking platform Facebook. A close second is US-based mobile gaming start-up Pocket Gems’ ₹6.8 lakh ($135,000), followed by global miner Rio Tinto’s ₹6.6 lakh and Japanese consumer electronics major Sony Corp’s ₹6.0 lakh. Facebook has also made two offers of ₹6.2 lakh ($130,000) and six offers of ₹6.4 lakh ($125,000) across the IITs. The year definitely looks great. There is a lot of demand for students, especially from companies that want to train them to be global leaders in research and development.

Salaries, too, have gone up 10-20%. The way the process has started, we don’t see any market sentiment impacting it,” said N Ramesh Babu, professor and placement advisor at IIT-Madras.

The placement process, which started on Thursday, will continue into April.

So far, 19 companies have completed the placement process, making 96 offers. Amazon, Schlumberger, IBM and ITC have been among the regulars on campus while new names on the block include Flipkart and EXL Service.

RSS at all IIT Campuses II

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The line-up of companies wanting to tap Indian talent also includes investment banking and securities firm Goldman Sachs, management consulting firms McKinsey and The Boston Consulting Group, Internet companies Google, Shell Technologies, Swiss offshore drilling company Transocean, Deutsche Bank and Indian heavyweights HUL and TCS.

At IIT-Madras, 15 companies made 45 offers on Day 1. The highest was from Pocket Gems, which picked up three students at the same salary, followed by Facebook’s offer for two US positions. Last year, the highest offer at the campus was ₹28.7 lakh from Transocean.

Goldman Sachs picked up 11 students at a pay package of ₹26.7 lakh while Sony Corp (Japan) snapped up five with salary packages of ₹30 lakh each. Transocean offered a pay package of ₹28.7 lakh to one student while Deutsche Bank picked up eight students at salary packages of ₹21.5 lakh. Google is offering ₹20.21 lakh.

The institute’s Guwahati campus has landed the highest offer until now amongst all campuses, from Facebook. “Three students have been offered packages of ₹15.0 lakh ($30,000) each for positions based in the US,” said Saurabh Basu, faculty-in-charge training and placements at IIT-Guwahati. “Microsoft has made 10 offers, of which two are in the US, at a salary of around ₹19.0 lakh ($38,000).”

Google has made two offers, of which one is in the US,” he added.

The overall response has been better than last year. “More than 200 companies have already confirmed for December. Last year, a total of 280 companies had come till June,” said Revi Sinha, professor-in-charge, placements, IIT-Bombay.

The campus at Bombay is playing host to 5-10 new companies this year, including Works Application from Japan and American retailing company Target Corp.

Sinha, too, said that packages have gone up 10-20% compared to last year. The campus had The Boston Consulting Group, McKinsey, Goldman Sachs, Morgan Stanley, Deutsche Bank, Google, Facebook, Microsoft, P&G, Sony and Shell on day 1. Students bagged 120 offers.

At IIT-Kharagpur, Facebook made the highest offer at ₹125,000 to four students who will be based in the US. “The campus saw a total of 94 offers from 17 companies at the end of Day 1, which had Opera Solutions, Rio Tinto, Schlumberger, Microsoft and HUL among the recruiters,” said placement head SK Sivasubramanyam. “Day 2 had Intel, Nomura, American Express and Amazon, among others.”

A similar placement start unfolded at IIT-Roorkee. Till now, 140 companies have signed up as compared with 120 last year. The highest offer on day 1 was ₹6.6 lakh from Rio Tinto, which was surpassed on day 2 by Facebook, which made two US offers for around ₹30,000 ($60,000) each. Companies on day 1 included Rio Tinto, Schlumberger, Texas Instruments, Shell and ITC, while day 2 saw Cairn Energy and Paypel among others. Microsoft offered 12 jobs, of which eight were based in the US.

“Salaries on average have been 15-20% higher than last year,” said IIT-Roorkee professor-in-charge placements, PK Jain. Last year, the average salary was ₹7.5 lakh across all programmes. This year, the institute aims to place 1,200 across all disciplines.

At IIT-Delhi, over 20 companies picked up 130 students, piling a boost to last year’s salary average on the first day by 10%, offering similar packages as they did in other top campuses.

But the professor-in-charge of placements, Rakesh Sen, sounded a note of caution: “We will do well this year, but given the market sentiments, we are keeping our fingers crossed. The start has definitely been good,” he said. The institute has more than 200 companies registered with it for the process.

IIT-Kanpur, which started the process on Friday, has 200 companies lined up from across sectors. Of these, 25 are coming on campus for the first time. IIT-Kanpur has 950 candidates registered for placements this year.
It’s raining dollars for eight IIT-Madras students

B. Aravind Kumar

CHENNAI: After many rounds of interviews through Skype all through the night, news broke at dawn on the IIT-Madras campus that eight students of computer science had been selected on a salary of a minimum $1,00,000 per annum to work for the world’s new generation computer companies in the United States.

At 4 a.m on Friday, IIT-M’s placement office received confirmation from the US offices of Pocket Gems, Facebook and Google of offers of $1,37,000; $ 1,25,000 and $ 1,10,000.

Prateek Gaur and C.H. Dinesh will join a team of young computer professionals developing games for mobiles for their start-up firm Pocket Gems, based in San Francisco. “You will have a sense of ownership,” said Mr. Gaur, excited about working for the start-up.

“As of now, the company’s core team consists of the best computer science students from top US universities and I am looking forward to be part of this select group,” said Mr. Dinesh, who has already developed Android-based applications during his internship.

“In the interview, they threw us the problems they face on a daily basis to find simple solutions that work effectively. They drive you to be the most efficient even in the interview,” he said.

Tejasvaroop chose Google over Pocket Gems as he believes the net giant offers more options to pursue his career. M. Prathab, a native of Tuticorin, opted for Google instead of Facebook, for a lesser pay package. “I did my internship with Google and had a pre-placement offer as well.” Learning computer science on the campus and specialising in C++ programming, he wants to work in distributed systems.

I. Sasi, P. Pratik and Chennai-boy Karthik are the other three who will be part of the Google team in the US. Mr. Pratik will be based at Mountain View, the Global Headquarters of Google. “It is because of my job profile as software testing engineer. The others will join as software developers at various locations. “Google offers wide areas to chase your dreams. You can switch teams and you won’t be bored,” said Mr. Sasi.

Another student of computer science, Sarungh Bharadwaj will join Facebook.

A curriculum comprising core areas of operating systems, distributed systems and networking combined with electives in every area of computer science was of immense help, the students said.

IIM-C students choose Govt. sector for internship

Shiv Sahay Singh

KOLKATA: Fifteen students of the Indian Institute of Management Calcutta (IIM-C) have opted out of the Summer Placements process with some choosing to pursue their internship in Government organisations and some preferring to explore other avenues. IIM-C officials said here on Saturday.

“This is an indication that students are trying something beyond the conventional approach. The students are trying to gain experience depending on their own interest,” Professor Amit Dhiman, chairperson, placements, IIM-C told The Hindu after the completion of the summer placements for the 2011-13 batch which was also the largest batch so far. The participating companies included first timers like investments banks from Japan, Portugal and West Asia.

He said that the students looking for alternative avenues for career development have opted for internship in organisations like the Reserve Bank of India, Madhya Pradesh Government and start-up companies which are offering different profile to the students.
INTERVIEW: PROF P RAMESHAN
DIRECTOR, INDIAN INSTITUTE OF MANAGEMENT (IIM), BOHRAK

‘IIM’s future vision is faculty and research’

Almost 10 months after he took charge of the newly-established Indian Institute of Management (IIM) at Rohilkhand, Professor P Ramesh, director of the institution, has a clear vision of the institute. He recently had a few interviews with business-minded students and spoke about his plans for the future.

How have the past ten months unfolded for the institute after you took over?

I joined the institute in November last year and the faculty was just starting to arrive. There was no regular faculty and we are building a website. On the faculty front, we have recruited two new faculty members and we have eight faculty members on the student front, we had a batch of 130 students who achieved 90% result. This is our second batch of students.

Are you hiring more faculty?

Yes. The process is on and ten people have agreed to join us. So even if a few don’t, we will have a faculty strength of around 30 in the next two years. We are looking for faculty who have a research background or are from good institutions.

Now that the institute is in its second year, how has the relationship with IIM Lucknow shaped up?

IIM L, Lucknow, continues to be our mentor. They helped us start and launch the institute. Their faculty is still teaching half our courses.

What about adding new programmes?

The first batch will pass out in March 2013 and we are planning to launch two new programmes next year and launch in 2014. Further, a fellowship programme in management (FPM) is also planned.

We have seen a long-term vision for the next 30 years. What is the strategy for that vision?

Our long-term vision includes faculty recruitment and development. Knowledgeable faculty need their own frameworks, models, and they will research and disseminate their own knowledge and thereby have publications and own new studies. We plan to achieve this through establishing faculty research units.

Like other IIMs, do you plan to set up centres of excellence in field-specific research?

Certainly. Research and specialisation are part of the long-term plan. Food security, social entrepreneurship, agricultural support to rural and indigenous technologies are our interests.

Any more foreignays in the pipeline after the one with Bocconi?

The partnership with Bocconi includes an academic exchange at faculty and student levels, joint supervision of doctoral work and collective conduct of workshops and conferences, besides joint research work and joint delivery of courses. Going ahead, we will need proper alignment with Bocconi to whom we can provide management inputs.
The team collected nearly 300 soil samples from different parts of India. They learnt to isolate DNA from soil bacteria and produce it in bulk using the polymerase chain reaction (PCR) technique. They used a specialised technique to check whether any samples contained bio-engineered organisms. No sample had them.

The team mapped all the sites from which they had collected samples. By attaching a camera to a helium balloon, they obtained aerial pictures of each site. These pictures were overlaid onto the sampling map, along with the molecular results of each sample from lab. They designed a soil collection kit and a BioLab from commonly available materials.

Their work led them to important questions. For instance, can science be taken to ordinary people? Can people with little exposure to science help in synthetic biology projects?

The team discussed their project with people in the areas where it had collected soil samples.

Thattai and Rai have helped guide Indian teams at iGEM since 2007. Apart from this SriShi team, the researchers have worked with students from other institutes, including IIT-Bombay and the Institute of Bioinformatics and Biotechnology, Pune. The SriShi team actually worked at the NCBRS labs and also built a community lab to enable ordinary citizens to engage with the life sciences.

This is the second time SriShi students have won a prize at iGEM. In 2009, the SriShi team won the Best Presentation Award for the Smell of Rain project in which team members cloned and created bacteria that produce the smell of freshly moistened earth. Thattai and Rai guided that team as well.

The art guidance in these art-and-science bridging projects was provided by Yashas Shetty, for many years an artist-in-residence at NCBS. The Centre regularly invites artists, historians, theatre practitioners and others to spend time on campus interacting with its scientists.

Another bright result is this bridge-building and award-winning SriShi project.
An Earth-like planet will be found in a year: Scientists

Dennis Overbye

Cambridge, Mass: At least four times in the last few years, astronomers have announced they have found planets orbiting other stars in the sweet spot known as the habitable zone — not too hot, not too cold — where water and thus perhaps life are possible. In short, a so-called Goldilocks planet fit to be inhabited by the biochemical likes of us. None of these claims are without controversy, but astronomers who are making discoveries with NASA's Kepler spacecraft are meeting next week in California to review the first two years of their quest, which seems tantalizingly close to hitting pay dirt.

"Sooner or later, Kepler will find a lukewarm planet with a size making it probably Earthlike," said Geoffrey Marcy of the University of California, Berkeley, who spends his time tracking down candidates identified by Kepler.

"We're no more than a year away from such a discovery," he said. NYT NEWS SERVICE
Aakash to open new windows for e-governance projects

AKSHAT KAUSHAL
New Delhi, 3 December

Aakash, world’s most affordable tablet PC, may soon make its way into the country’s power corridors and may help fight corruption. After showcasing his favourite gadget to the world leaders at Unesco and World Bank, Telecom and Human Resources Development Minister Kapil Sibal now wants all central ministries to use Aakash for their e-governance projects. Sibal believes the tablet PC would help plug the leakages that cause corruption, if used in e-governance projects.

To further the project, Sibal has written a letter to all ministries to consider his proposal and requested each ministry to recommend applications for projects they want to be implemented through the tablet.

Speaking to Business Standard, Sibal said, “I want Aakash to be used as a platform of delivery. I have written a letter to all Cabinet ministers requesting them to let us know what kind of applications they want in Aakash.”

Sibal believes that maximum leakages in governance can be plugged through the use of technology and similar to what he plans through Aakash. “Intermediaries will be eliminated. And most of the concerns of the people against corruption would be addressed if such a project is executed,” he said.

Aakash, the world’s most affordable tablet PC. PHOTO: BLOOMBERG

Aakash to open new windows...

The tablet-PC, which was launched in New Delhi on October 5, has been developed jointly by Canadian company DataWind and Indian Institute of Technology, Roorkee, under the HRD ministry’s National Mission on Education.

The government is buying 100,000 tablets from DataWind at a price of $225 per unit. For the project, Sibal has also got the Unique Identification Authority of India head Nandan Nilekani on board. Sibal has asked Nilekani to develop an Aadhaar application for the tablet PC. “It will be interesting to see how all these applications can be integrated,” Sibal said. The Aakash tablet has a seven-inch display with 800-by-480 pixel resolution, 256 MB RAM, two GB flash storage, and a 566 MHz processor. The tablet runs on the Android 2.2 operating system.

VIRAT VAIBHAV ND 4/12/2011 P-3