Newspaper Clips

February 7, 2011

Times of India ND 07-Feb-11 P-1

IIT-B may set up campus in New York

Hemali Chhapia | TNN

Mumbai: The Indian Institute of Technology-Bombay could soon have a second address—in New York.

The New York City Economic Development Corporation (NYCEDC) has invited IIT-B to submit a proposal to set up a campus in the Big Apple for applied science courses.

The Mumbai institute will fill a lacuna that the city's five boroughs have had all these years—a world-class facility for applied science teaching

▶'Considering plan', P 10

and research with a strong bent towards applied engineering.

A committee at IIT-B is firming up the institute's pitch, which will be sent to NYCEDC by April. The host city will make a capital contribution, in addition to possibly providing land and other considerations.

IIT Bombay director Devang Khakhar, invited by NYDEC to consider setting up a campus there, said the concept was being explored. "My team is working on a feasibility plan," he told TOI.

IIT-B dean: Considering NY proposal seriously

Hemali Chhapia | TNN

Mumbai: IIT-Bombay may soon set up a campus in the Big Apple for applied science courses. New York mayor Michael Bloomberg has said the city must optimize its business strengths.

"The city is committed to finding the right partner and providing the support needed to establish such a facility because research in the fields of engineering, science and technology is creating the next generation of global business innovations that will propel our economy forward," Bloomberg said.

EXPANDING HORIZONS

"New York City has all the ingredients to complement an applied science and engineering hub — a highly educated global population, an unparalleled financial and business community to provide capital and support for new ventures and existing top-notch institutions performing cutting-edge research. We want to capitalize on those strengths," he added.

Apart from inviting top institutes around the world to send in their offers, New York City Economic Development Corporation (NYCEDC) has also broadened its hunt by allowing institutes wanting a presence in NY to apply under this scheme. IIT-Bombay's dean (international relations) Subhasis Chaudhuri, said: "The proposal is at a rather nascent stage. But we are considering it very seriously."

NYCEDC, which has received responses from a select group of top schools from around the world bidding for the same project, is likely to assess all the expressions of interest in April and later work toward setting up the school in a year.

Terming this as a "once-in-a-generation opportunity", Bloomberg said: "The impact of this initiative will be extraordinary."

Times of India ND
07-Feb-11 p-8

Killer tusker triggers lockdown at IIT-Kgp

Kharagpur: One of the two tuskers that have terrorized Kharagpur for the last two days entered IIT-Kharagpur on Sunday, triggering panic and a lockdown that the elite institute has never seen in its history. All lights have been switched off and the campus shut to visitors.

Announcements were being made on loudspeakers for everyone in IIT-Kharagpur and the town itself to lock themselves indoors.

There is reason to be afraid. The elephants, who got separated from the herd last week, have already killed a man and critically injured an elderly woman. The one that attacked the woman is probably in IIT, say officials.

Chased by villagers and foresters, the elephants split on Sunday and used the highways to move towards Midnapore and Kharagpur towns.

The campus is on lights-out mode and all gates have been shut. Only one gate in the rear has been left open in the hope that the elephant will escape. "So far it has been futile. We have not been able to turn the elephants away," said a ranger. TNN

Times of India ND 07-Feb-11

p-12

US to consider reinstating Tri-Valley students' visas

Washington: The US Immigration and Custom Enforcement (ICE) has indicated that it is ready to consider reinstating the immigration status of those Indian students, who have lost their student visas due to the closure of a California-based "sham" university.

"We received a message from ICE on Sunday, in which they indicated that they would consider the possibility of reinstatement of their (students) visa status through I-539," Susmita Gongulee Thomas, consul general, Indian consulate San Francisco said. I-539 is the form used by US Citizenship and Immigration Services (USCIS) for visa extension and change of immigration status.

DAMAGE CONTROL

When one is out of the visa status for one reason or the other under a particular law of the US and the individual is not in criminal violation, USCIS may agree to give the reinstatement of his or her status under this form.

Duped by the authorities of the Tri-Valley University, which has now been shut down, hundreds of Indian students, mostly from Andhra Pradesh, faced the threat of being deported back home after having lost their student visa status.

However, no immediate detail of ICE's one-liner to Indian consulate in San Francisco was available. Thomas hoped that more details and clarification on this would be available from ICE early next week.

She said all indications are that this is not going to be a general amnesty and ICE would consider the request for status change or visa extension on a case by case basis. "It seems quite positive that they are willing to consider at least the possibility of reinstating of some of the students," Thomas said.

"I think it will be case by case basis, because earlier we had clarified that there is nothing like the general amnesty. It would be case by case, because they feel that there might be some students who are in criminal violation of the immigration," she added. PTI

Times of India ND
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SHORT CUTS

Archaeological sites found using Google Earth

An Australian archaeologist claims to have identified nearly 2,000 potentially important sites in Saudi Arabia using Google Earth. David Kennedy, a professor of classics and ancient history at the University of Western Australia, says with the help of satellite images from Google Earth he has pinpointed 1,977 archaeological, including 1,082 teardrop shaped stone tombs in the Arab country. "I've never been to Saudi Arabia. It's not the easiest country to break into," New Scientist magazine quoted Kennedy as saying. Instead, Kennedy said, he scanned about 1240sqkm in Saudi Arabia using Google Earth. From their birds-eye view he found 1,977 potential archaeological sites.

Times of India ND 07-Feb-11 p-15

As survival becomes easier, our brains shrink to make us smarter

Washington: Human brains have shrunk over the past 30,000 years, puzzling scientists who argue it is not a sign we are growing dumber but that evolution is making the key motor leaner and more efficient.

The average size of the brain of modern males — homo sapiens — has decreased about 10% during that period — from 1,500 to 1,359 cubic centimeters, the size of a tennis ball. Women's brains, which are smaller on average than those of men, have experienced an equivalent drop in size. These measurements were taken using skulls found in Europe, the Middle East and Asia.

"I'd called that a major downsizing in an evolutionary eye blink," John Hawks of the University of Michigan told Discover magazine.

But other anthropologists note that brain shrinkage is not very surprising since the stronger and larger we are, the more gray matter we need to control this larger mass. The Neanderthal, a cousin of the modern human who disappeared about 30 millennia ago, was far more massive and had a larger brain.

DOWNSIZE THIS: The average size of human brain has shrunk by 10%

Psychology professor David Geary of the University of Missouri said these traits were necessary to survive in a hostile environment.

Geary and his colleagues used population density as a measure of social complexity, with the hypothesis that the more humans are living closer together, the greater the exchanges between group, the division of labor and the rich and varied interactions between people.They found that brain size decreased as population density increased.

"As complex societies emerged, the brain became smaller because people did not have to be as smart to stay alive," Geary said.

But the downsizing does not mean modern humans are dumber than their ancestors — rather, they developed different, more sophisticated forms of intelligence, said Brian Hare, an assistant professor of anthropology at Duke University. AFP

Times of India ND 07-Feb-11 p-15

Traffic jam? This car turns into plane in just 30 secs

London: Fed up with traffic jams? Here's some good news — 'the flying car' is on its way. An American company, Terrafugia Transition, based near Boston, is to soon start manufacturing "the flying cars", called the Transition Roadable Light Sport Aircraft, which can be transformed from a car to a plane in just 30 seconds.

The Transition can fly at 185kmph and reach 105kmph on the road; on the ground, with its wings tucked up and in, it can fill up with petrol at a normal filling station and fits in an average size garage, the Sunday Express reported.

'The flying car' is set to go into production this year and is expected to cost between £125,000 and £160,000, say its developers.

Richard Gersh, of Terrafugia, the US company which makes the vehicle and hopes to sell 200 a year, said: "This is an aeroplane first and foremost. The idea is you can drive it to and from a regulation airport. Fully fuelled, you can fly it for a range of 400 to 450 miles. We have 100 orders so far. There are still some minor changes that need to be made because it has to meet both road and aviation standards. However, we expect to be delivering at the end of this year."

FLYING START: The flying car, called the Transition, can fly at 185kmph and reach 105kmph on roads. It can fill up at a normal petrol pump and fits in an average-sized garage

According to the CEO of the company, they have successfully test-flown 'the flying car' as many as 28 times.

"It has been very successful. We have got a very good handling vehicle and our test pilot said that the flights were just remarkably unremarkable — it just flies like a really nice, little airplane," CEO Carl Dietrich told Canadian TV. He also said that this car would also ease problems for pilots who currently face problems like weather. PTI

Times of India ND 07-Feb-11 p-15

Bat-winged drone bomber clears hurdle

Los Angeles: A robotic, bat-winged bomber designed to take off from a US aircraft carrier has passed its first test in a debut flight in California, the US navy said.

The X-47B jet, which looks like a smaller version of the B-2 stealth bomber, stayed in air for 29 minutes and climbed to 5,000ft in a test flight on Friday at Edwards Air Force Base, according to the navy and defense contractor Northrop Grumman.

Military leaders see the plane as part of a new generation of drones that would be able to evade radar and fly at much faster speeds than the current fleet of propeller-driven Predators and Reapers used in the war in Afghanistan.

INVISIBLE TO RADAR

"Today we got a glimpse towards the future as the US navy's first-ever tailless, jet-powered unmanned aircraft took to the skies," Captain Jaime Engdahl, a programme manager for the warplane project, said in a statement.

Northrop is building the navy bomber under a $636 million contract awarded in 2007. With no pilot on board, the experimental aircraft was operated by a joint navy and Northrop team on the ground.

The plane "flew a racetrack pattern over the dry lakebed with standard-rate turns," the navy said.

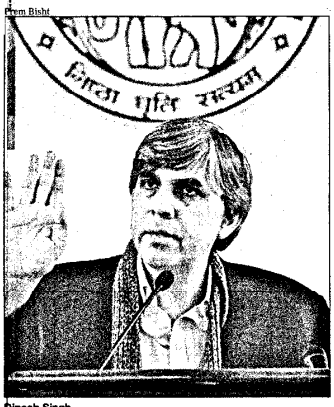
It will be years before the X-47B joins the naval air fleet, with the first tests on a carrier scheduled for 2013, Northrop said. AFP

Times of India ND 7/02/2011 (Education Times) p-8

EDUCATION TIMES CATCHES UP WITH THE NEW VICE-CHANCELLORS OF DELHI UNIVERSITY (DU) AND JAWAHARLAL NEHRU UNIVERSITY (JNU)

A BEAUTIFUL MIND

Prem Bisht



Dinesh Singh

Tirna Ray/TNN

Change, innovation and motivation are the three fundamentals that will revolutionise education in the 21st Century. A thinker, mathematician and painter, Dinesh Singh, who took over as vice-chancellor of Delhi University in October 2010, feels that it is time for institutions to change and evolve. Unless and until we reinvent ourselves, he says, we will not be able to understand and cater to the real needs of students.

How does Singh plan to bring about change in DU, one of the most coveted universities in the world? "By changing the mindset of teachers. As a centre of learning, we are too caught in the past. While on the one hand I agree that we should draw lessons from the past, we cannot keep eating into our capital. It is time to create a future capital and be innovative."

Singh, who is currently engaged in a 15-year effort to reform mathematics education in Indian schools, attributes his real learning to peer interactions in college and not to classroom learning. In fact, he questions the very relevance of 'classrooms' in the 21st Century.

While Indian universities are churning out thousands of graduates through rigorous classroom learning, he says, they are not producing industry-ready professionals. As a consequence, he adds, the machine-tool industry has started setting up its own endeavours to train people with real-world job skills. This makes it clear that there is a need for institutes and universities to upgrade the curriculum to equip graduates with relevant job skills.

Also, Singh stresses that institutes should encourage liberal thinking and open mindedness among students so that they can explore options and identify their 'inner' calling.

In fact, instead of a restricted academic structure, the future is in open universities and open learning. "They are inclusive by nature, accommodating the need of every individual. Well-known institutes, on the contrary, tend to have a system that thrives on exclusion."

Citing an example, he quipped, "I can imagine Ramanujam, the mathematical genius of India, walking into DU and I despite being the vice-chancellor of the university not being able to appoint him as a professor because he lacks a formal university education."

Referring to new tools of learning, Singh feels that instead of being too cautious, the world of academia should realise that the internet can not only create incredible networks, but also build repositories of knowledge. Emphasising that real learning takes place out of the classroom in the form of peer interactions and from assimilation of real-world wisdom, he reiterated that individual learning is the key to knowledge.

Education is more of an inner journey of the self. The role of guru or teacher is only to arouse curiosity in the mind of one who seeks knowledge, he says, adding, "a guru can guide and nudge the pupil, but it is the pupil who has to think and act."

> Institutes should encourage liberal thinking and open mindedness among students so that they can explore options and identify their inner calling

TALKING HEADS

Homing pigeon

Manash Pratim Gohain/TNN

HIS vision is to take the university to a global level as well as make it a centre for knowledge creation. The 11th vice-chancellor of Jawaharlal Nehru University (JNU), Sudhir Kumar Sopory, also envisages a return of the vibrant culture of student politics.

Sopory, a plant molecular biologist, says his key vision for JNU is to focus on research. "I would like to continue the good work done by my predecessors. Also, there are no Indian universities or any research project that are ranked in the top 100 globally. By the time my term ends, I would like JNU to achieve that feat. To make it to the top 100 in research we need to excel in research activities and knowledge creation. Moreover, we have to break the barrier between the schools, centres and departments of the university and encourage multi-disciplinary research," says Sopory.

Known for its vibrant culture in student politics, recently JNU has been in the news over allegations of violation of Lyngdoh Commission recommendations for student union elections, and the matter is in the Apex Court. Commenting on this, the new VC says: "The student union election is unique and I want to protect the culture of student politics on campus. I don't know how successful I will be as the issue is outside the domain of JNU administration. Moreover, these elections are conducted by students with no interference from the JNU administration. But if the VC can do anything to revive the process, I will lead from the front. After all, good politicians should also come from universities."

On infrastructural issues, he added that campus life has to be attractive and his focus will be on the hostels. "Apart from increasing the capacity, I would like to make the stay comfortable for students. I found out that the hostel manual I prepared two decades back is still available, and it needs to be updated."

Sopory is not new to the university, he joined JNU during the tenure of the first VC G Parthasarathy in 1973. Reminiscing about the early years, he says, "The VC called and said I am looking for somebody who is not married, and I stayed on for 23 years in JNU. I was also the warden of the first hostel — Kaveri. I was a member of JNU Teacher's Association and its vice-president as well. So I was more than happy to accept the offer to come back to JNU after a gap of 13 years."

On any other area that he would like to improve, Sopory adds, "Teaching needs to be improved so that students come to classes."

> A centre for the creation of knowledge, a hub for creating responsible political leaders and a comfortable and secure place for higher education is what Sopory intends JNU to become during his tenure as the vice-chancellor

Sudhir Kumar Sopory

Financial Chronicle ND
07/02/2011 p-6

Samsung to tap education sector with B2B solutions

JAYASHREE MAJI
New Delhi

SAMSUNG has set its sights on tapping the potential of the growing B2B segment, with a stated target of $100 million (Rs 455 crore) during 2011, specifically targeting solutions for the education sector.

It will also boost its B2B business by integrating its IT and mobility solutions this year. Samsung's total sales in the IT and mobile division was $ 38 million (Rs 173 crore) during 2010.

"This year, we plan to move the IT B2B business to the next level by having a comprehensive product offering across mobility, display computing and printing segments that should help us notch up sales of $ 100 million across various verticals that we are targeting. The education sector should contribute around 25 per cent to our B2B business," said the country head of mobile and IT of Samsung India Electronics, Ranjit Yadav.

Yadav said that the company would be targeting high-end schools with both IT and mobility solutions. It will have 15 channel partners in nine cities. "In the first phase roll-out of our plan, we plan to focus on nine cities — Delhi/NCR, Chandigarh, Mumbai, Kolkata, Pune, Bangalore, Hyderabad, Chennai and Ahmedabad," he said.

The company will be supplying Samsung tabs, its rival to the iPad, which can be used by teachers for classroom teaching, maintaining records and marking students.

As part of this initiative, Samsung plans to target 20,000 plus educational institutes with IT and mobility solutions. It has unveiled an interactive e-board that enables latest teaching applications. The new display board named Samsung 650 TS is priced at Rs 525,000. Globally, for Samsung, the interactive white board market is estimated to be worth Rs 1.1 billion.

"As opposed to conventional black boards, Samsung 650 TS provides a wide viewing angle and comes with a dummy pen and web cam to enhance student-teacher interactivity," the company said in a statement.

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Back to school

- Samsung will target high-end schools with IT and mobility solutions along with partners
- It will supply Samsung tabs for use by teachers in classroom teaching and maintaining records
- The company plans to target 20,000 plus educational institutes in nine cities
- It has also unveiled an interactive e-board that enables latest teaching applications

Financial Chronicle ND 07/02/2011 p-12

A flying car that is ready for production this year

PRESS TRUST OF INDIA
London

FED up with traffic jams? Here's some good news — 'The Flying Car' is on its way.

An American company, Terrafugia Transition, based near Boston, is to soon start manufacturing "the flying cars", called the Transition Roadable Light Sport Aircraft, which can be transformed from a car to a plane in just 30 seconds.

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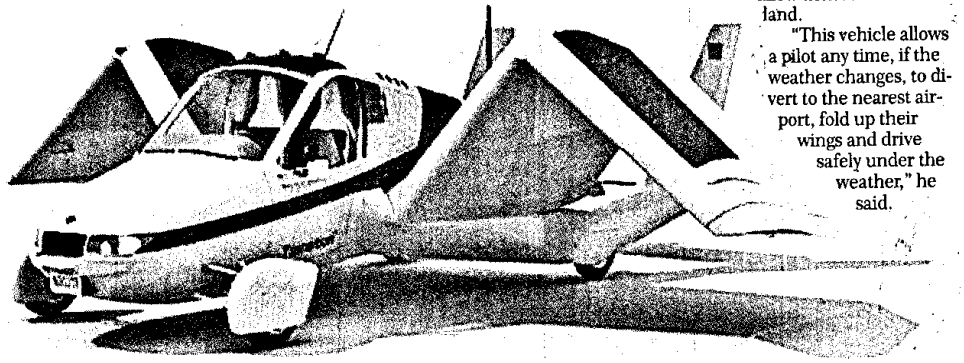
He also said that this car would also ease problems for pilots who currently face problems like weather which sometimes doesn't allow them to take off or land.

"This vehicle allows a pilot any time, if the weather changes, to divert to the nearest airport, fold up their wings and drive safely under the weather," he said.



Economic Times ND 07/02/2011 P15

Taking stock of Indian management research

The dismal number of research papers by Indian B-schools neither matches global standards, nor the country's potential

Nirmalya Kumar

> If India is to go from being an imitator to an innovator, we need our leading academic institutions and faculty to produce world-class research, and not be satisfied simply with producing good students through a competitive selection process and competent classroom instruction

THE mission of post-graduate educational institutions, business schools included, is to impart cutting-edge knowledge. This knowledge is generated through research. But what really constitutes research in a business school?

ET readers know that a business school student has to spend countless nights preparing case studies. Cases that either document best practices or push students to confront business dilemmas by putting them in a manager's shoes are invaluable for teaching. While recognising that cases can be insightful and can help students reflect on general business principles in the hands of a skilful instructor, we consider development of cases for classroom use to be more a matter of pedagogy than the generation of cutting-edge knowledge. We say this despite having written more than 50 teaching cases and teaching notes between us. Not surprisingly, whilst supporting the development of teaching cases, top business schools around the world draw a clear distinction between case development and research.

If case development is not research, what is? Research at business schools can be classified as being academic or practitioner-focused, reflecting the distinction between basic and applied research in any science. Both types of research attempt to uncover general principles of management, but with different emphases on immediate applicability and the standards of proof.

Academic research is typically double-blind peer reviewed—i.e., the author and the reviewer do not know each other's identities — and sets a high standard for proof, but often has limited immediate applicability. Practitioner-oriented research appears in influential publications like the *Harvard Business Review* and is geared towards immediate application, but generally with lower standards of proof and reviews. Business schools are constantly struggling to overcome this trade-off between 'rigour' and 'relevance'.

It has become fashionable to critique academic research in management for its low immediate applicability to 'real life', but this is a misunderstanding of its purpose. There are at least three reasons why world-class business schools view academic research as a backbone that support the pedagogical mission. First, academic research can lay the foundations for concepts that eventually influence practice. Today's strategists, financiers and marketers cannot do without concepts like core competencies, the capital asset pricing model and brand equity, all of which originated in academic research. Academic research also helps in debunking so-called 'best practice'. The poor returns for investors from major acquisitions or art or fast-growing markets, for instance, were first documented by academic researchers. Second, the skills developed by academic researchers are invaluable in providing a rigorous foundation for teaching, consulting and writing for practitioners. These specific skills are embodied in the scientific method and include developing an internally-consistent argument with the fewest possible assumptions, considering alternative hypotheses, designing critical experiments, and so on. Third, on a more pragmatic note, business schools compete for faculty talent, and the smartest graduates from the leading doctoral programmes in business and management aspire to be thought leaders, not teachers. If a school does not support academic research, then attracting the best faculty is impossible.

To assess the state of business research in India, we examined data on authorship of research by India-based authors for the period 1990-2009. We chose a widely-accepted list of 40 journals that the *Financial Times* uses for ranking research at business schools in their annual global MBA rankings (*www.ft.com*). Using the ISI Web of Science database, we tracked down all articles in these journals during the timeframe that listed at least one author with an affiliation to an institution in India. We then computed Indian author-count for each article. For instance, for an article with three authors, one of whom was based in India, we counted the author appearance as 1. If all three authors were based in India, the score would have been 3.

Over these two decades, the total number of Indian author count was 132 (108 unique articles, or about 5 articles per year for the entire country). This is not an impressive number by the standards even of a single leading global business school. For example, schools such as Hong Kong University of Science and Technology (about 100+ faculty members) currently produce about 30-plus articles annually, whilst a larger business school like Wharton (200+ faculty) produces about twice as many articles. However, there are some interesting and encouraging signs.

First, historically, in the 1990s, the most productive institutions for business research were not business schools but the Indian Statistical Institutes (ISIs) in Calcutta and New Delhi. However, in the 2000s, the business schools had clearly taken the lead with the Indian School of Business (ISB) at Hyderabad and the Indian Institutes of Management (IIMs) at Bangalore and Calcutta.

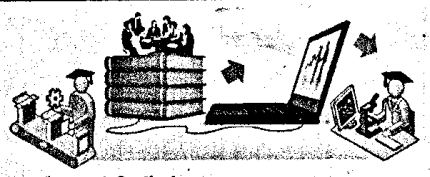
Second, amazingly, a new school, ISB at Hyderabad, has managed to wrest a leadership position in research over the more established IIMs despite publishing their first article in our sample in 2003! This is also one reason for the high ranking of their MBA programme by the *Financial Times*. In our view, the research culture at the ISB plays a large role in creating this intellectual advantage. To be world class, not only at teaching but also at research, the IIMs and other leading Indian business schools must find ways to create research cultures including the selection of appropriately-trained faculty, providing research support and adopting a manageable teaching load.

The faculty members in India who have been the most productive researchers as measured in our study are P Chaudhuri (ISI-Calcutta), S Juneja (IIT-Delhi and Tata Institute of Fundamental Research, or TIFR), D Kamdar (ISB), A Sen (ISI-Delhi), B K Sinha (ISI-Calcutta), E S Srinivas (XLRI) and S Swami (IIT-Kanpur).

We admire them for their motivation and ability to publish world-class research in an environment that, with a few exceptions, does not encourage research in a substantial way. Often the presence of these individuals at an institution is what is driving the appearance of that institution in the rankings tables.

HOUSTON, WE HAVE A PROBLEM

- In the 1990s, the ISIs were most productive for business research. But the B-schools had taken the lead in the 2000s
- New school ISB has wrested a leadership position in research over the more established IIMs despite their first article in 2003



Research Quotient

Period 1990-1999

RANK	Institution	Author count
1	ISI-Calcutta	10
2	ISI-New Delhi	7
3	IIM-Ahmedabad	4
4	DSE*	2
4	IIM-Bangalore	2
4	IIT-Kanpur	2
4	ISI-Bangalore	2
4	University of Pune	2

Period 2000-09

RANK	Institution	Author count
1	ISB**	11
2	IIM-Calcutta	10
3	IIM-Bangalore	9
4	IIT-New Delhi	5
5	XLRI	4
6	IIT-Kanpur	3
6	ISI-Calcutta	3
6	ISI-New Delhi	3
6	TIFR	3

Consolidated Period '90-'09

RANK	Institution	Author count
1	ISI-Calcutta	13
2	ISB**	11
2	IIM-Calcutta	11
2	IIM-Bangalore	11
5	ISI-New Delhi	10
6	IIM-Ahmedabad	6
7	IIT-New Delhi	5
8	XLRI	4

*Delhi School of Economics **Indian School of Business

JAYEETA

If India is to go from being an imitator to an innovator, we need our leading academic institutions and faculty to produce world-class research, and not be satisfied simply with producing good students through a competitive selection process and competent classroom instruction. This is an imperative for the country given the large number of youth who aspire to go into management, the exponential growth of business firms and the increasing globalisation of Indian firms. After all, why should all the Indian management gurus be based outside India?

For more details on the data and methodology, readers are invited to our Aditya Birla India Centre website at the London Business School (*www.london.edu*). We are committed to updating this list annually. Since this is the first year we have conducted this exercise, our methodology will undoubtedly evolve; feedback and suggestions are both welcome on how to improve it.

(Co-authored by Phanish Puranam. The authors are professors at the London Business School and co-directors of the Aditya Birla India Centre at the school. Their book, India Inside: The Emerging Innovation Challenge to the West, will be published by Harvard Business Press in November 2011)

Mint ND 07.02.11 p-9

NEW REALITIES

Govt should fund education, leave running to private firms

By Madhurima Nandy & Bhargavi Kerur

BANGALORE

The government will deliver its budget for 2011-12 later this month amid inflationary and fiscal concerns. The budget should promote infrastructure, create opportunities for entrepreneurs and new businesses, and encourage research and development, said panellists on the Bangalore leg of Mint's Budget Agenda 2011, a four-city pre-budget discussion.

Speakers debating the topic 'Driving inclusiveness in industrial growth' included Krishnan Ganesh, entrepreneur; Harish Bhat, chief operating officer (COO), watches, **Titan Industries Ltd**; Manish Sabharwal, chairman, **Teamlease Services Pvt. Ltd**; Poornima Shenoy, president, India Semiconductor Association; and Anil Padmanabhan, deputy managing editor, *Mint*. Haseeb A. Drabu, a former chairman of **Jammu and Kashmir Bank** and a *Mint* columnist, moderated the discussion. He started off by asking the speakers to talk about how to make the Union budget relevant to new realities and new businesses in their respective fields. Edited excerpts:

Manish Sabharwal: The big lesson of the last 20 years, which happens to be the 20th anniversary of reforms, is that growth actually doesn't lead to poverty reduction. Poverty reduction comes from three Es—education, employment and employability. In the next 20 years, the five states of Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu and Karnataka will account for 45% of GDP (gross domestic product), which is only 5% of the population. Uttar Pradesh, Bihar, Orissa, Rajasthan will have 45% of population growth. Next is geography of work in sectors. Geography of work needs to be shaken up badly. And third, which is obvious to everybody, is matching skills. The skills with which people are coming out of the education system into vocational system, there is a gap between the two... The budget would be important if you would create road clusters and get all the agenda that is already on the table out of the way, around education, employment and employability.

Krishnan Ganesh: From my entrepreneurial point of view, from the services sector, we need people with certain skills for which we train people to service the global markets, and we are willing to do that. Fundamental question is, what can the government do and what are the challenges we are facing? (At) any call centre or information technology (IT) services industry, we start doing multiple things, like power generation and transport infrastructure, which actually should be done by the government. We have taken these for granted as things that the government won't do. But this works for some time. This works for some time. But imagine the cost of doing all this. In TutorVista, this is why we decided that people should work from home. It took only five years for a sunrise sector like the BPO (business process outsourcing) sector to lose out to the Philippines because it became uncompetitive in the global market. Creating the basic infrastructure to encourage services, business entrepreneurs is what the government and the budget should do...

Poornima Shenoy: If India has to continue at a growth of 7.8% year on year, we need to see larger investment into research and development (R&D) and investment into supporting innovation. Until 2006, China had no R&D policy. Today, they spend about 1.5% of their GDP in R&D, and in five years they plan to spend up to 2.5% in a focused and orderly manner. The UK and (the) US spend about 2.5% and plan to spend about 2.7% of GDP. India, on the other hand, which produces a larger number of engineers, has 0.8% of its GDP invested into R&D and this number has been static for several years and we don't see any focused effort right now. We need to start looking at how we build products in India for India and start targeting other geographies of the world.

Harish Bhat: The story of consumer confidence is what should be protected by the government and the budget this time. According to recent data by AC Nielsen, India has the highest consumer confidence in the world, which reflects the purchasing pattern of consumers in the last 12 months. Impulse buying is back and consumers are willing to open their purse strings. The central story of the budget is that the government should empower industries in whatever sector by ensuring consumer confidence continues to remain at a high level, and for that we need a stable economic environment. The budget has to ensure stability and that would be the foremost task. Many, many years ago, I would attend these budget lectures by Nani Palkhiwala in Mumbai and he used to say that there are only two kinds of budgets, which finance ministers produce. One, a 'tinkerous' budget with small 'tinkerings' around parameters, and the other an 'architect's' budget. I think this budget should be an architect's budget for supporting the India growth story and protecting consumer confidence.

> The private sector is perfectly capable of operating education efficiently as we have seen in airlines, telecom...

On the budgetary allocation of expenses, and can there be a fresh look on how the money should be spent?

MS: We have got the big picture. We have to get around with the agenda, with education reforms, like allowing private sector, and allow education with public money through private delivery. That could be one of the biggest innovations of the decade. The government doesn't have agents for delivery. It is time to attach strings to money we allocate. We should have a different system to education than keep adding money to it. We need to create apprenticeship programmes to build skills and assets to increase productivity. The finance ministers of states have the ability to create fear of falling in the hope of rising, ability to create performance incentives, to link allocations to outcomes.

PS: R&D is a new economy industry and carries a far lesser amount of baggage. We need to start looking at the next 20 years in a different light altogether. How can we look at better public-private partnerships (PPP)? New York state decided to invest into urban technology with Columbia University. Companies like IBM (Corp.) decided to step in. It is seeing better use of facilities, better infrastructure which is a win-win for PPP. In India, too, we need to see more such coordination.

KG: I firmly believe in education, fundamental education or even vocational training; the government should not actually be doing it, but should only fund it and not try to operate it. The government school system is a failure in India, unlike the US or Europe, where the government or public schools are the best schools. My driver doesn't send his kids to a government school. My submission is that government should act as a fund giver, and the private sector is perfectly capable of operating it efficiently as we have seen in airlines, telecom or any other sector where the private sector has been allowed. Let the private sector compete and do the job. The fundamental shift needs to happen and that can't be restricted to public-private partnerships. PPP schemes are good but tough to implement. One key issue is—don't operate and be the fund giver; automatically young entrepreneurs will come.

HB: I agree with Manish that there should be a smart allocation of budgetary funds and there should be support for corporates in specific areas where India has strategic advantages. Coming from the watches industry, India can well become a manufacturing hub for specific industries worldwide, particularly when the Chinese manufacturing chain is going through convulsions and shock due to wage and cost increases. The Indian watch industry is about 47 million watches, but the global watch industry is about 1,000 million watches. Can India take a 10-20% share of the global watches industry and take it away from China? There are opportunities for corporates to create manufacturing hubs within the country, and they would do it if the government provides adequate infrastructure to support it, or else these opportunities would go to Vietnam or other countries.

Anil Padmanabhan: You are saying the budget has to be employment friendly, portable, and horizontally scalable. Input-wise, smaller units contribute a fair amount (40%) but I see no representation of them in the Union budget, except for tinkering with excise, or preserving Mahatma Gandhi's legacy of *khadi*. Beyond that, there is no focus to create small entrepreneurs.

madhurima.n@livemint.com

WHAT WOULD YOU ADVISE THE FINANCE MINISTER?

Provide the funds and let the private sector do the operations and delivery.

KRISHNAN GANESH
Entrepreneur

Nurture skill and education instead of funding institutes. Fund students.

MANISH SABHARWAL
Chairman, Teamlease Services

Benefits for corporates who are investing into hardcore R&D, like tax breaks and intellectual property rights, should be retained in India.

POORNIMA SHENOY
President, India Semiconductor Association

Maintain the stimulus and look at making India one of the manufacturing capitals of the world.

HARISH BHAT
COO, watches, Titan Industries

Photographs by Abhijudha Chowdhury/Mint

BUDGET AGENDA

Financial Express ND 07/02/2011 P-12

Tech colleges cheer cloud education

Diksha Dutta

Constant innovation at IT companies is compelling engineering colleges to introduce specialised courses in cloud computing, which will in-turn help their students to be in demand

THE action around campus placements is picking up. And this time, engineering colleges or T-schools have a bunch of modern geeks to offer to the hi-tech companies. At present, the buzzword in the $60 billion Indian software industry is 'cloud computing', and our home-grown technical institutions realise that. While many have already introduced specialised courses or full semesters on cloud computing, some are on their way.

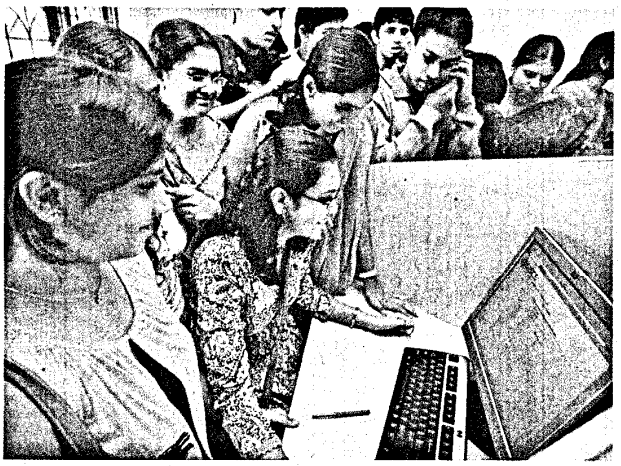
Renowned names like IITs, IIIT-Hyderabad, IIIT-Delhi comprehend the importance of cloud computing in their educational curriculum and research projects, along with the infrastructural support that cloud can provide them.

Taking the latest example, Indraprastha Institute of Information Technology (IIIT) in Delhi is about to launch a specialised course in cloud computing from the next semester. It will also be introducing cloud computing in the educational curriculum from the current semester for its 300 odd students in the college. Pushpendra Singh, assistant professor at the institute says, "Students are very keen to learn cloud computing and the demand has come from their eagerness to learn innovative technology. We are enthusiastic to use the cloud platform for research as well as education." The institute uses Google act engine and Microsoft as platforms for cloud computing.

A few T-schools projected the importance of adding cloud in their educational curriculum much earlier. Vasudeva Varma, associate professor, International Institute of Information Technology (IIIT) Hyderabad, takes us through the journey of the institute, "We are conducting a cloud computing course for the last three years—which is very popular. This was perhaps the first course in India on cloud computing. About 100 students take this course today, the number was 45 three years back. It is not a compulsory course, but it is a very popular elective course."

He further elaborates that this course was developed taking inputs from Yahoo! Cloud Computing group. Many industry leaders from Yahoo!, Amazon, Google, Microsoft and Pramati give guest lectures in the course. It is a full semester course which expands over a five month period.

Even professor Janakiram from IIT Madras shares, "Institutions of higher learning like IIT have high-performance computing requirements in almost every area of research e.g. aerospace engineering, atmospheric and ocean modeling, computer vision, data mining, etc. Cloud computing provides access to virtualised resources as a pay-as-you-use service on the Internet."



He further elaborates that a characteristic of academic environment facilitating easy adoption of cloud is that of security not being a prime concern. Thus cloud computing for academic environments has huge potential to spur innovation with low cost and no space requirements.

The recruitment angle

It is evident that specialised training on cloud would help in better jobs for these freshers. Hari Vasudev vice-president, Cloud Platform Group, Yahoo! feels that the trend of institutes looking at cloud computing started 2 to 3 years back. The major change which has happened now is that the professors and faculty are getting more involved in research on cloud computing. "They are also slowly introducing it in the curriculum of the students," he says.

Talking about the hiring trend followed, Vasudev confesses, "Training on cloud computing definitely helps the institutions in better recruitment. It is a symbiotic relationship between us and these institutes as we often look at hiring students who are trained on cloud computing on our platforms." Yahoo supports IIT-B, IIIT-H, IISc and many other T-schools through its cloud platform.

THE FACULTY AT ENGINEERING COLLEGES IS GETTING MORE INVOLVED IN RESEARCH ON CLOUD COMPUTING. HENCE, THEY ARE SLOWLY INTRODUCING IT IN THE EDUCATIONAL CURRICULUM OF THE STUDENTS

Vasudev from IIIT-H agrees, "The students trained on computing courses are the most sought after during recruitment. In a very indirect way, the companies always prefer students trained on their cloud platforms during the placement season. The companies which offer training on cloud platforms to our institute are Yahoo!, Amazon Web services, Microsoft, Google etc." He also adds that the companies often send their employees to have one hour sessions with the students and thus train them on the cloud technology.

Simultaneously, Microsoft has conducted training sessions for over 150 campuses, training over 18,700 faculty and 32,800 students on cloud computing technologies across the past six months. The sessions have been conducted by MS employees with a view towards helping the academic ecosystem understand this powerful new platform and build learning repositories & curriculum.

Pratima Amonkar, director—Academia, Developer Platform Evangelism (DPE), Microsoft India comments, "We see a strong trend of engineering colleges feeling the need to teach cloud computing to their students as many jobs are based on software as a service today. We are working with many universities like the Jawaharlal Nehru Technological University in Andhra Pradesh which has a curriculum around cloud computing. This trend of cloud education picked up aggressively in the last one year."

Thus, many T-schools may not be using cloud as an infrastructural support prominently to save cost. But, they are definitely training their students on the art of cloud computing, which will help them grab better jobs.

Financial Express ND 07/02/2011 P-11

INTERVIEW: PROF DOMINIQUE TURPIN

PRESIDENT AND NESTLÉ PROFESSOR, IMD, SWITZERLAND

'We have the global mindset that no other B-school in the world has'

IMD, 'International Institute for Management Development', known for its World Competitiveness Yearbook, *has a long history of providing executive education. Founded in 1990, IMD was created in a merger between IMI and IMEDE, two independent business schools. Today, it has grown beyond a business school and has become a global meeting place for executives from all over the world, delivering the best in "real world" learning. In an interview with* **Vikram Chaudhary** *of* The Financial Express, **Prof Dominique Turpin** *shares IMD's India plans and why the business school is not just a business school. Excerpts:*

What brings you to India?

Our focus, as you know, is executive education. We have customers all over the world, as in India, so I regularly visit the country to meet them. IMD has a strong focus on training and developing general management and leadership skills. We select experienced candidates for both the Master of Business Administration (MBA) and the Executive MBA. Our another focus is to have a broad international group of participants attending the courses to ensure that no nationality dominates. I also met the IMD alumni during this visit to India, as we have IMD alumni clubs, one in Mumbai and the other in New Delhi. Apart from that, we had a roundtable of CEOs to get some advice as to what should be our strategy for India.

Since India will soon be opening up the higher education sector, would IMD be interested in setting up a campus in the country?

No. We are a very small business school, having 50-odd professors, so it will be suicidal for us to set up campuses in new locations. IMD intentionally doesn't set up branches in other countries but brings the participants together in Lausanne, Switzerland, to stimulate cross-cultural interaction. IMD is actually the global meeting place for executives from all over the world. Last year we had some 8,000 executives, representing over 98 nationalities, coming to IMD to attend one of our programmes, or we went to teach in their country. I must add that out of our 50-odd professors, only two are Swiss.

Indian management institutes are evolving, have you thought about tie-ups with them so as be a kind of 'mentor' to them, considering that your research levels are quite good?

Not really. The reason being that our model is quite different from global business schools. We are not a university. We don't get any money from the government, we just focus on developing global talents for big corporations. Rather we were founded to 'develop' general managers for international corporations.

What makes you different?

Well, it is the global mindset we have. For instance, if you go to a US business school, it'll teach you the US perspective of how to run a business—to do the business the American way. You go to Japanese school and you will learn the Japanese way. But Switzerland is such a tiny country, and that's why we have the global mindset that no other business school in the world has. We can offer Indian companies the perspectives that they won't find in India.

YOU FIND ENTREPRENEURS IN EVERY COUNTRY. BUT THE QUESTION IS HOW SUPPORTIVE YOUR GOVERNMENT IS, CAN YOUR GOVERNMENT MAKE THE LIFE OF AN ENTREPRENEUR EASY? IT TAKES DAYS, MONTHS TO BEGIN A BUSINESS IN INDIA

What is the IMD *World Competitiveness Yearbook* all about?

IMD, for more than 20 years now, has been ranking different economies on competitiveness. The IMD *World Competitiveness Yearbook* (*WCY*) is reputed as being the worldwide reference point on the competitiveness of nations, ranking and analysing how an economy manages the totality of its resources and competencies to increase the prosperity of its population. We have like 360 criteria and these criteria are spread into four categories—economic performance, government efficiency, business efficiency and infrastructure. Now there are people in the West who are looking at both China and India. For instance, if they have a million dollars more, where would they like to invest in, China or India? So our report helps them understand where to spend.

The *WCY* found that in overall ranking India is at the 31st position while China is at 18th. Although India outperformed China in business efficiency, what brought India down in overall rankings is infrastructure. And this is one aspect where I believe India should focus more. When I landed in New Delhi I saw this huge airport comparable to the best in the world, but there was no dedicated highway to reach the downtown (*"well, the next time he comes to New Delhi, he may not feel the same as the Airport Express Line of the Delhi Metro would be functional; and India may catch up with China in the years to come"*), but the Chinese do it differently, if there is a big airport, there is also a big highway. To develop the infrastructure is critical to develop the economy.

The culture of entrepreneurship is on a rise in India, and various business schools are also prompting it. Yet the numbers are far behind China's. What, in your opinion, are the reasons?

You find entrepreneurs in every country. But the question is how supportive your government is, can your government make the life of an entrepreneur easy? A major reason India lags behind China is bureaucracy, which doesn't make it easy for a business to start—it takes days, months to begin a business in India. While on the other extreme, you go to Singapore and in a matter of hours you can start a company.

Being a marketing professor, can you share how to be a successful entrepreneur, or, on a larger scale, how to build a global brand?

First of all you need an innovative idea, because if you are doing what everybody else is doing, then you have a problem. Then you need to invest in creating awareness for the product, otherwise nobody will know that you exist. Once you have a successful start, then it's really necessary to keep innovating. For instance, when the iPod came, there were new versions, say, every six months or so. On the other hand, there is Levi's, which is now fading in Europe; when you talk to teenagers, they say, "Oh! that's a brand of my father, my grandfather", why, because Levi's is not innovating itself. And then you have to have passionate employees, so much so that they turn into brand ambassadors. Lastly, you should invest in growth, but mind you, growing too fast is not a good sign, because you have to invest equally in growth as well as innovation. And once you turn successful, the challenge is not to turn complacent.

Business Standard, ND 07-Feb-11 p-8

'India is our only campus abroad'

As international B-schools test Indian waters to set up their campuses, Schulich Business School, part of Canada-based York University, has already tied up with India's GMR Group to build a campus in Hyderabad. Schulich Dean DEZSÖ J HORVÁTH *tells* **Kalpana Pathak** *the one in India campus is the school's only full-fledged campus abroad. Excerpts:*

When will your campus be up and running?
We have acquired 25 acres land in Hyderabad to set up a full-fledged campus for a global MBA programme, the same that we offer at our Toronto campus. Around 15 acres of this campus is for school and 10 for recreational activities on campus. We will be operational in September 2012 with a student capacity of 60 which will increase by another 60 in the subsequent two years. So by 2013 we will have 180 students in India. Opportunities offered to students at the Toronto campus will be available here as well. We have partner schools overseas in countries like France, Korea, Thailand and China, but India campus will be the first full-fledged campus abroad.

Does this mark an end to your association with SP Jain Institute?
Yes and no. We have been associated with SP Jain Institute of Management and Research for over three years now. While we will deliver the MBA programme through our Hyderabad campus, we may look at carrying on our relationship with SP Jain through other research and exchange programmes. They have been a very good partner and we would like to take this partnership forward even if its in other ways.

Your programme fee at ₹30 lakh is pretty high. Do you think Indian students will have an appetite for your MBA programme?
Yes we charge high fee. But our MBA is value for money. It is not about how much you charge but how much your students generate after five years of graduation. Schulich is ranked among the highest when it comes to value for money in an MBA programme.

Q&A

DEZSÖ J HORVÁTH
Dean, Schulich Business School

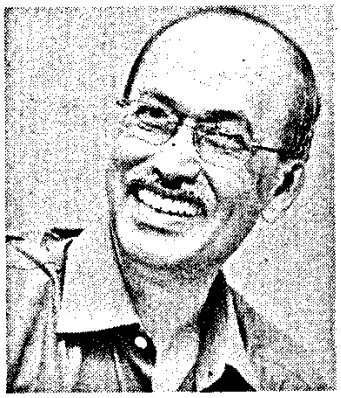
In any dimension we match any best B-school in the world today. Schulich's MBA programme has been rated among the top 10 in the world as per The Economist's 2010 rankings, and 6th among non-US schools by Forbes. We have had a good response from Indian students as we have taken the second batch of students now. We see the demand for a good management programme only increasing.

Foreign universities may have to deposit $10 million as corpus to come to India. Your take on that.
It is not yet clear if this money has to be paid in cash or one just needs to provide a guarantee for the same. While it may frighten away a lot of international universities which wish to come to India, for us it is not a deterrent. Whatever happens we will be here in India. I am a good fund raiser and I know the Canadian government will support us.

Business Standard, ND 07-Feb-11 p-8

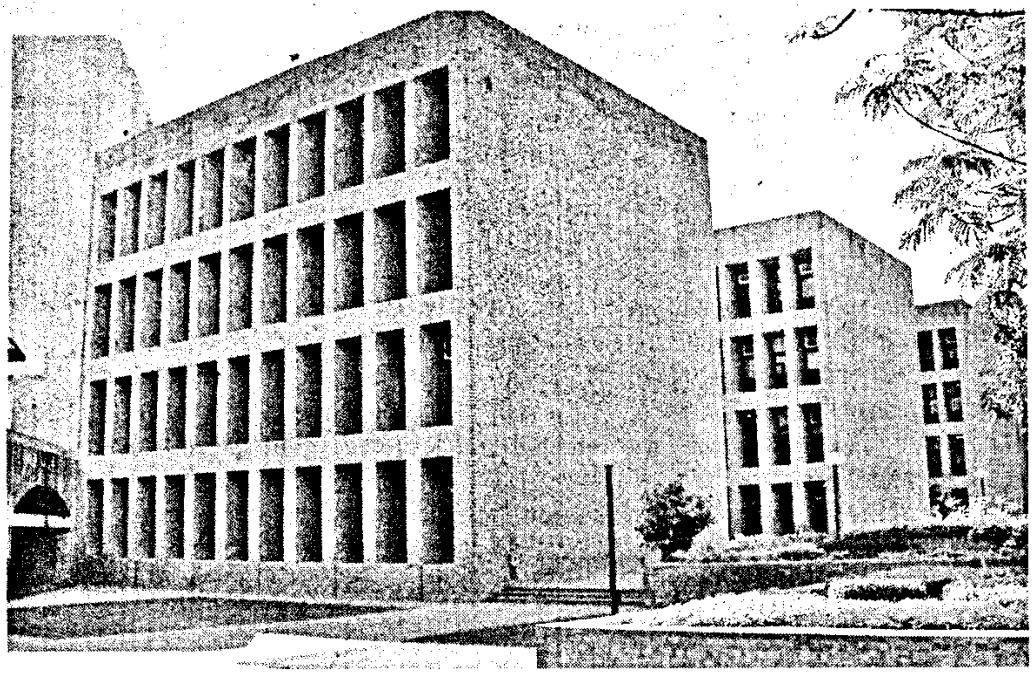
IIM-A TO SPREAD WINGS ABROAD

The institute will look for rented premises to launch programmes in Dubai or Singapore



'WE WILL LOOK FOR LOCAL PARTNER. WE DO NOT WANT TO DRAW MONEY FROM OUR CORPUS FOR OUR CAMPUS ABROAD'

— SAMIR BARUA
DIRECTOR IIM-A



International ranking by the *Financial Times* will help IIM-Ahmedabad as it plans to go international

KALPANA PATHAK
Mumbai

The Indian Institute of Management, Ahmedabad (IIM-A) may have an international campus in Dubai or Singapore or both, by 2013. A senior faculty member from the institute told Business Standard the matter is being deliberated currently. The institute has decided it will go solo.

The Indian Institutes of Management (IIMs) had in October 2009, received an in principle approval from the Ministry of Human Resource and Development (MHRD) to set up campuses abroad.

Samir Barua, director, IIM-A said the institute so far has been hesitant on an international campus due to faculty shortage and concern on the quality of students.

"We need a good faculty pool to launch a full-time management programme. We will also look at the cost structure and a local partner. We do not want to draw money out of our corpus to expand internationally," said Barua.

IIM-A at present has around 95 faculty members and needs another 30 faculty members. "Once we have 105 faculty members we would be in a comfortable position to have another campus," added Barua.

Last week Financial Times ranked IIM-A's post graduate programme in management for executives, 11th in a list of 100 top B-schools in the world.

In September 2010, IIM-A had been ranked eighth for its two-year post-graduate programme in management (PGP) in the Financial Times Masters in Management 2010 ranking from among 71 programmes.

"International ranking will certainly help as we go international. We plan to rent a facility abroad and tie up with a local partner for the infrastructure. The fee charges would take care of the operating expenses for the campus. To begin with the class size would be 40 students," added Barua.

The MHRD, had in October 2009, allowed IIMs to go abroad but only as a collective brand. Some IIM directors, however, felt it would affect the individual brand identity of their campuses, and had made known their fears to the MHRD.

Around six years ago, IIM Bangalore (IIM-B) was the first among IIMs to think of an international footprint — Singapore. The idea of a campus in Singapore, however, was turned down by the then HRD minister Arjun Singh who felt there was a need to meet domestic demand first.

IIM Bangalore on the other hand said, it is still figuring out what is the appetite for its MBA, internationally. "There is no clear strategy yet. As of now we have some partners with whom we are doing some international programmes but no plans have been firmed up for an international campus yet," said Pankaj Chandra, director, IIM Bangalore.

IIMs have maintained that along with an international presence, they want to have a mix of international students and their global linkages will help them achieve this.

They are however, confident that an IIM campus abroad will be financially viable since the fees will be of international standards and therefore much higher than Indian fees. Indian institutes with campuses abroad generally go for a two-cycle approach, which involves setting up operations through a rented place for two years and branching out to their own campuses in three years time.

"Starting with rented premises helps the institute get quickly off the ground and also allow it time to understand and study the geography to set up a campus or expand," points out an IIM director.

HINDU ND 07/02/2011
P-3

IGNOU, IIT-B conduct 'Digital Drishti' workshop

Staff Reporter

NEW DELHI: Indira Gandhi National Open University's Advanced Centre for Informatics and Innovative Learning in partnership with the Indian Institute of Technology-Bombay conducted a "Digital Drishti Workshop" here earlier this week.

The workshop provided basic computing and Internet surfing skills to the visually-challenged using free and open source software.

The aim of the initiative was to provide "digital vision" with the assistance of software driven spoken tutorials. Participants were provided with an overview of Linux-based screen readers for the visually-challenged.

The workshop enabled participants to operate basic Internet functions to increase their employability.

Social networking sites such as Facebook were also accessed.

HINDU ND 07/02/2011
P-5

IIT student falls from hostel roof, dies

DEHRA DUN: An IIT student died on Sunday after he allegedly fell from the roof of a hostel located inside the premises of the institute at Roorkee in Haridwar district of Uttarkhand.

Prima facie it did not appear to be a case of suicide, police said adding the body had been sent for post mortem.

Twenty-year-old Manish Kumar, a second year student of IIT Roorkee, allegedly fell from the fourth floor of the Radhakrishnan Bhavan Hostel where he was staying.

The family had been informed about Manish's death, police said adding investigations were on to ascertain the exact cause of the death.

- PTI

HINDU ND 07/02/2011 P-10

India, Norway for joint polar research

R. Ramachandran

NEW DELHI: The potential for enhancing collaborative polar research between India and Norway is immense. This was the message of the Indo-Norwegian meeting titled 'Pole to Pole' on February 3, which included an exhibition and a seminar, and was organised by the Ministry of Earth Sciences and the Royal Norwegian Embassy in collaboration with the Ministry's National Centre for Antarctic and Ocean Research (NCAOR), Goa, and the Norwegian Polar Institute, Tromsø.

Such collaborative research, the scientists of the two countries believe, will yield new insights into the effects of climate change and, indeed, the Polar Regions are referred to as nature's laboratories. Geology, glaciology and bacteriology were identified as the key areas for future collaboration in polar science at the end of the meeting that discussed possible areas for joint exploration and investigations.

After three decades of Antarctic research — India's first expedition to Antarctica was in 1981 — India expanded its polar research by undertaking its first Arctic expedition in August 2007 and setting up its Arctic research station 'Himadri' at Nye-Ålesund in the Svalbard region of Norway in 2008 to mark the International Polar Year (IPY). India established its first Antarctic research station Gangotri in 1983 and the second permanent station Maitri in 1989. It is establishing its third Antarctic station at Larsemann in East Antarctica.

Unlike the Antarctic, Norway has a sovereign right over the Svalbard region, which is governed by the Svalbard Treaty of 1920. The Treaty today has 40 member countries. India signed the Treaty in 1923 which gives it the right to establish a research station there.

India and Norway are the nearest neighbours in Antarctica and have been carrying out joint research in the past.

Different climate

The present initiative will take the collaboration further by widening the scope to include studying the Arctic region, which has a fundamentally different climate from Antarctica, as well. While the Antarctic is all solid, the Arctic is an ocean surrounded by landmass.

Inaugurating the meeting, Pawan Kumar Bansal, the Minister of Science and Technology, thanked Norway for the support in India's polar research endeavour and said that there was a wide gap in our understanding of the Arctic which was hindering a much needed bi-hemispherical approach to polar sciences. The objective is to carry out studies similar to what has been done in the Antarctic in the last 30 years.

It is, in fact, known that the Arctic is undergoing dramatic climate change. According to Nalan Koc of the Norwegian Polar Institute, the Arctic summer is disappearing and one is already seeing the impact of climate change from the observed loss of sea ice.

According to her, temperature anomalies in the fall in the Arctic during 2005-08 have been greater than 5°C, which could affect weather patterns even away from the Arctic.

The Norwegian Minister for Research and Education, Tora Åasland, who also addressed the gathering, said: "We are now both in the Antarctic and the Arctic." Speaking to *The Hindu* later, she said: "India has been doing polar research for many years, not the least because of the Himalayas, the third pole. And Indian research in polar questions, like air pollution, ocean pollution, changes in the glaciers and changes in the behaviour of animals, are the ones that Norway is also interested in. And that's the reason why the two nations have found each other."

Unique natural system

At the Indian station in Svalbard, research is being done on long-term monitoring of Kongsfjorden, a unique natural system where saline water input from the Atlantic mix with the fresh water melt from the Arctic glaciers.

Svalbard's geology is also unique where a complete geological column extending from Precambrian is exposed. Investigations are also being carried out on aerosol and precursor gases over the Arctic region, diversity of Arctic cyanobacteria, crustal formation studies and assessment of the flora and fauna of the Arctic.

"We intend to come out with a composite geological map of the Arctic," said Rasik Ravindra, the head of the NCAOR which operates and manages the Svalbard research station.