Newspaper Clips
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HT Mumbai

'Many IIT-ians have contributed to US economy'

HT Correspondent
htmetro@hindustantimes.com

CHANCELLOR OF THE UNIVERSITY OF CALIFORNIA, BERKELEY, NICHOLAS DIRKS IS ON HIS FIRST OFFICIAL VISIT TO INDIA

MUMBAI: In the country on his first official visit as the chancellor of University of California, Berkeley, Nicholas Dirks, who is a scholar on Indian history, said he was "excited" about the upcoming general elections in India. He also said that it was the responsibility of the government to address the global challenge of climate change.

Speaking to HT on Wednesday, Dirks said that while connecting with UC Berkeley alumni in India was the main priority of his visit, he was also keen on communicating on issues of climate change and sustainable economic growth during his six-day trip.

"Climate change is an issue that can no longer be ignored. In the US, we face the same issue of economic growth and sustainability, but there has been more awareness among citizens about the issue of climate change, which is also the case in India," said Dirks. "We are looking at ways in which we can assist in ventures of higher education, particularly those that will do research on global issues such as sustainable energy and climate change," he said.

On Tuesday, Dirks had met with chief minister Prithviraj Chavan, an alumnus of UC, Berkeley, as well as with representatives of educational institutions such as IIT-Bombay and Tata Institute of Fundamental Research.

"I spoke with the chief minister about issues of urban planning, particularly on how satellite cities such as Navi Mumbai can work on a sustainable model," said Dirks.

The UC chancellor also shared his institute's vision to make the Berkeley campus energy-neutral by 2020. "We are conducting experiments on the sociology of energy to analyse behaviour patterns when it comes to energy consumption."

Dirks promised more collaborations between UC, Berkeley and Indian educational institutions. "Many IIT-ians have contributed to the US economy. We have benefited from Indian students and we want India to benefit as well," he said.

Hindustan Times ND 20/03/2014
P-12

NOW, YOU CAN TAKE JEE EXAM IN GUJARATI, MARATHI, URDU

Vanita Srivastava
vanita.srivastava@hindustantimes.com

NEW DELHI: Students in Gujarat and Maharashtra will now take the Joint Entrance Examination (JEE-Mains) in Gujarati, Marathi or Urdu apart from Hindi and English. The choice will benefit 66,000 students of these states taking the exam on April 6.

Though, the provision of writing in Marathi and Urdu has been introduced for the first time, Gujarati was introduced last year as Gujarat had agreed to use the result for admission to state engineering colleges.

Only those writing the exam from a Gujarat centre would have a choice to take it in Gujarati, English or Hindi. Likewise, only those writing the exam from Maharashtra will have the choice of taking it in Marathi and Urdu.

Nearly 13.56 lakh students including 3,62,497 female candidates will write the JEE (mains) this year.

The top 1.5 lakh students will be allowed to appear for the JEE (advanced) exam, gateway for entrance to the 16 IITs. This would be the second year of JEE (mains) exam, since the new system was brought into force in 2013.

This year, for the first time answer key of the papers will be loaded on the website from between April 25 and 27.

In 2013, only Gujarat had agreed to adopt the result of JEE (Mains) for admission to its technical institutes.

This year, Madhya Pradesh, Maharashtra and Odisha have also joined the system. In total, seven states including Orissa, Haryana, Uttaranchal and Nagaland now accept JEE scores.

Political & Business Daily ND 20/03/2014 P-8

Editorial

Social sciences

Govt needs to give a push

IT is heartening to note that the Government is considering to provide a big push to higher education by improving its enrolment ratio. The ration in this critical segment is expected to grow to 30 per cent by 2020, thanks to the impressive growth of economy and manifold rise in investment in higher education by the Government. But such a high ratio would not be possible unless the Government encourages engineering colleges, especially IITs and NITs, to offer more subjects in humanities so that students have access to social science subjects. More attention on social sciences is necessary and should not be neglected anymore. We are becoming a victim of market-led education system where everyone dreams of becoming an engineer. During a recent International conference on social science research organised by the Indian Council of Social Science Research (ICSSR) and International Development Research Centre, academics, experts and policy- makers from 24 South, South-East, and East Asian countries unanimously proposed formation of a social science research network which will act as an advocacy platform in the region to strengthen research and its funding. It was indeed a positive move and would help in promoting higher education in these countries, including India with focus on social sciences. The experts rightly observed that there is a need to build an interactive platform for research among the developing countries. Although there is a global edge of physical over social sciences, the questions of governance, social and economic tensions and other such concerns have remained under-addressed in these nations.

Adequate funding of social science research remains critical and the country needs to make serious efforts towards augmenting funds. It is pity that social science research gets only around 2 per cent funding of what the physical sciences receive. There is a need to augment the funds not only from Government but also from private players and philanthropists. Social science research enables us to understand the reality and fashion the policies accordingly, which have the capability to bring significant improvement in the lives of people. Moreover, there is a need to link research with policy-making. To be complete, policy-making must be rooted in critical analysis of data and supported by theoretical formulations. Economic growth and social growth must move simultaneously for national development. There is no disagreement on the fact that modern research should be used to find solutions to the immediate and pressing needs of the society. Knowledge for the sake of knowledge is not what is required. Knowledge for healing is the need of time to address challenges of globalisation. Therefore, formation of social science networks and research councils are welcome measures but these institutes would require support from the Government as well. The Government should support research bodies and think-tanks in furthering their discourses on key social issues, including governance, youth, political participation, urbanisation, energy, infrastructure, and land markets for creating a vibrant policy framework for social change.

HT.Com ND 20.03.2014 P-6

COMPETING WITH THE BEST

ABYSMAL Despite their great reputation, India's top institutes have poor rankings

Ayesha Banerjee

One can't quite figure it out. The Times Higher Education World Reputation rankings were out recently, and Indian universities were nowhere around the top 200. Think about it. India's technology and management institutes with their tough entrance tests, and universities with their awe-inspiring cutoff lists turning down lakhs of applicants every year.... how can they not measure up with the best of the best global players?

The alumni of some of the best institutes in India and abroad say when it comes to pure theoretical teaching,there is nothing wrong with the Indian education system. "It is very surprising that the top universities in India like the IITs, BITS Pilani and some of the real world-calibre universities are not ranked much higher than these ratings show," says Anant Agarwal, president of edX, the online learning venture, or MOOCs, of Harvard and MIT that's helping millions of people access lessons designed by some of the finest minds on the planet.

Agarwal, who holds a PhD from Stanford and a bachelor's degree from IIT Madras, says he would like to question the way rankings are done. Many of the rankings combine both research and the education of the university, and in Indian universities in particular the reputation is highly based on teaching students.

The calibre of IIT students is highly regarded all over the world and Agarwal says he suspects that it is the volume of research that is holding things back. "I don't think these rankings give India n universities a fair share," he adds.

On his education in IIT Madras and following his interactions with IIT professors around India, Agarwal says, "The teachings of some of the best professors of our IITs are definitely comparable to the teachings of some of best professors of any universities I have seen around the world."

Is the Indian system then too 'rigid', in which academics and nothing but academics are pursued? Yashodhara Lal, who has 12 years of experience as a marketing consultant with Unilever and others, says most of the teachers at IIM Bangalore where she studied were excellent, and the facilities absolutely wonderful. The problem, she says, was the "tremendous amount of pressure and competition, and a certain degree of grade-obsession amongst most of the crowd." Even though there were opportunities for creative expression such as the fests, they were overshadowed by the overall desire to graduate with top marks.

Agarwal feels the resource-rich Western universities equip students with the right skills and also encourage them to go in for research. "Many rankings look at the number of Nobel prize winners a university has. They look at how many people have won international awards and many of them come from research. But my view is that maybe we should think of creating some rankings where we do not combine these teachings and create separate rankings for teaching and research," he adds.

Indian institutes will require a sea-change in attitude and possibly a greater degree of focus on all-round development, says Lal, who is also a Zumba fitness instructor, has written two books, Just Married, Please Excuse and Sorting Out Sid.

Talking about a three-month exchange programme she did with ESADE Business School in Spain, Lal advocates more opportunities for Indian students to interact with foreign universities.

The **IITs - Bombay, Delhi** and **Kanpur** - are also top of India's ranking, but again, they fall **below the 200th rank** and slipping. **Indian Institute of Science** continues to be the most highly rated universities in India, although it has seen its position **drop from around 130th place** to just **below 200** in the world. **IIT Bombay** has also **dropped to the 210-220 group,** while **IIT Delhi and IIT Kanpur** both now feature just **below 250th** position globally.

Times Higher Education World Reputation Rankings 2014

1 Harvard University
2 Massachusetts Institute of Technology
3 Stanford University

■ **Many of the world rankings combine research and education of the university, and in Indian universities in particular, the reputation is based on teaching students** IMAGESBAZAAR

ALUMNI OF SOME OF THE BEST INSTITUTES IN INDIA AND ABROAD SAY WHEN IT COMES TO PURE THEORETICAL TEACHING,THERE IS NOTHING WRONG WITH THE INDIAN EDUCATION SYSTEM

HT.Com ND 20.03.2014 P-6

Do rankings really make a difference to students?

Ayesha Banerjee

How attractive are university rankings to students? Should they make a choice based purely on how renowned a university or college is? Popular opinion veers towards the right fit. If you find a course of a college that offers a programme that seems to be tailormade for you, just apply, no matter what the rank.

Rankings could be important as they play a role in a candidate's decision to apply to a school, says Pejay Belland, director of marketing, admission and financial aid at INSEAD, considered one of the top B-schools in the world. "The main rankings in which we participate have typically been the globally recognised ones such as FT, Business Week and the Economist. It's clear that rankings such as QS and Poets & Quants are also becoming increasingly influential and we're very proud, for example, to be ranked number one by QS," she says.

However, advises Belland, once students have identified their top list, they need to do more research by talking to alumni, reaching out to the school and ensuring that the school(s) they choose really fit their needs.

Rankings matter most to students when they first come to seek advice, says Arjun Seth, director of EdBrand (www.edbrand.com), who leads a group of independent college admissions counsellors assisting students in identifying 'right-fit' colleges or universities abroad.

Once made aware of their options and after investing time on online research and talking to current students, the students are open to institutions that they may not have heard of earlier, Seth adds.

The reason why many young people today want to go abroad is that they don't have the high scores needed to get into a college in India. Also, they are attracted to the liberal arts system in the US, which allows them the freedom to explore various courses before selecting their major.

ONCE MADE AWARE OF THEIR AVAILABLE OPTIONS ONLINE, THE STUDENTS ARE OPEN TO INSTITUTIONS THAT THEY MAY NOT HAVE HEARD OF EARLIER

Other big draws are the student life on campus with opportunities for pursuing any interest they might have; research and internship opportunities missing in India; small class sizes and the quality of teaching in the smaller colleges; prestige of the big national universities, says Seth.

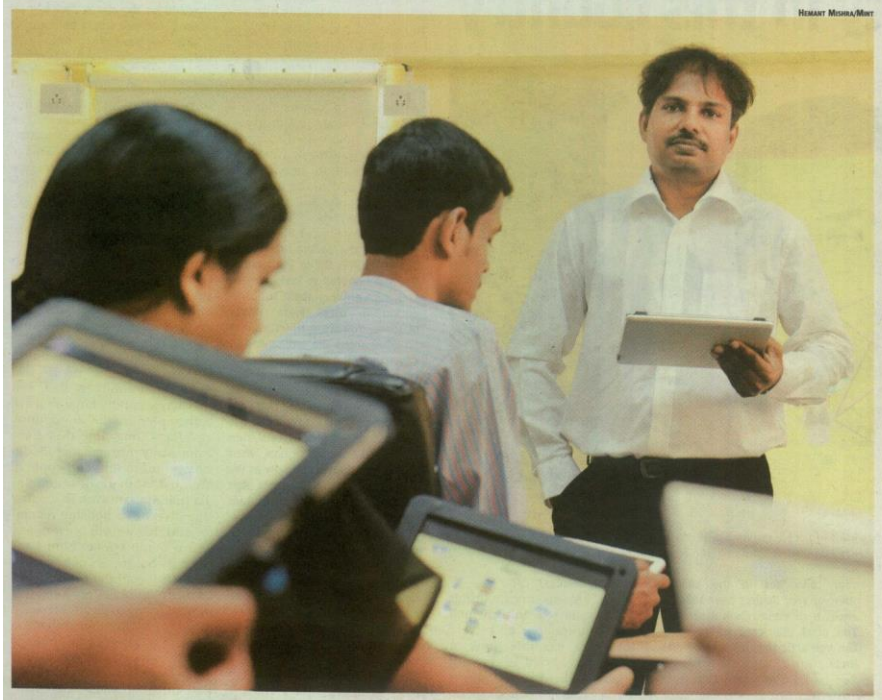
His advice to them is that the right-fit matters the most. Often rankings lead the students to a wrong path in their search for right fit colleges. To get to the top rung, a B-school should have a number of accreditations such as AACSB, Equis and AMBA, which provide it an internationally recognised seal of quality.

A strong alumni network across the world also enforces the reputation of the school globally, Belland adds.

On how INSEAD does it right, Belland says the diversity of the programme is clearly interesting for international students who learn about business from many different cultural perspectives. "We're proud to have over 80 different countries across our two intakes, with no dominant culture. This means that wherever a student studies, whether in Asia or in Europe, the experience is a truly international one," she adds.

START-UP ROUTE

Giving education a digital future



HEMANT MISHRA/MINT

Experts say there has been a surge in the number of education start-ups in India over the last two years, but only a fraction of them survive as product delivery remains a challenge for most

BY APARNA GHOSH
aparna.g@livemint.com

BANGALORE

Gowdhaman Margabandu was troubled by the fact that his six-year-old son could not wait to come back from school to play with his iPad.

"Why couldn't education be as much fun? I wanted to know if I could give students like him that experience even when studying coursework. Why shouldn't they enjoy learning new things?" said Margabandu, who founded **Digital Future of Education Pvt. Ltd** in August 2011.

His venture provides students and teachers access to coursework, quizzes and activity-based learning games on a tablet—an Apple iPad, Samsung Galaxy or even India's own Aakash, "depending on the project budget".

According to Margabandu, who is also the company's chief executive officer (CEO), nine schools and colleges, including some leading management schools in India, have signed up to make "classrooms technology-friendly and fun".

"It is the first technology we have used in the classroom. When a teacher goes into the classroom, all the tablets connect and automatically attendance is captured. Also there is no use of Powerpoint presentations and projectors because the lessons are displayed on students' tablets. We save a lot of time doing this," said Raja K.G., principal of Malik Deenar Institute of Management Studies at Kannur in Kerala, who introduced Digital Future's tablets into the classrooms of first-year MBA students in October.

Mushrooming start-ups

Experts say there has been a surge in the number of education start-ups in India over the last two years, following the popularity of smartphones and computer tablets.

"Tablets offer a unique opportunity to engage students in a personalized manner that was not possible previously, and offer great potential for content to become highly interactive and non-linear compared to conventional books or videos," said Anup Gupta, partner at Nexus Venture Partners, a venture capital firm whose portfolio includes education start-ups like **Talent Sprint Education Services Pvt. Ltd**—an online vocational training platform.

Education start-ups typically cater to K-12 (kindergarten to Class XII) education and continuing education. Experts estimate there are about 60 successful education start-ups in the market, and approximately 100-200 being launched every year.

A large number of these start-ups are said to focus on curriculum content development and mid-career education options such as skills training, vocational courses and online certification courses.

"This obvious spurt of education start-ups in the last 18-24 months is due to the sudden increase in the number of incubators in the country and the trigger of successes from the Silicon Valley," said Binny Mathews, co-founder of Dezyre.com, an online vocational course platform.

Dezyre.com, founded in November 2012, offers about 14 courses on big-data programming and finance to professionals who wish to further their careers. Most courses are pre-recorded, except for Hadoop—a big-data programming language which is delivered live.

Huge market potential

India Ratings and Research Pvt. Ltd, a part of the Fitch group, in a February report estimated the Indian education market to be worth ₹5.9 trillion in 2014-15 against ₹3.33 trillion in 2011-12.

"Professional education and online learning are big and growing. Working people want to improve their skills and are willing to pay to learn and earn degrees or certification," said Ganesh Krishnan, a former CEO of TutorVista, which is an online personal tutoring website that was acquired by **NCS Pearson Inc.** for $213 million in 2013. This is only exit in the Indian education space in recent years.

Edupreneurs (a term sometimes used for education entrepreneurs), who were, until recently, smitten only by the idea of online content creation—be it for degree certifications, K-12 coursework or vocational skills, now want to experiment with new kinds of courses.

Khan Academy, for instance, is a YouTube video-based education platform that has become popular across the globe. It is a non-profit educational website created in 2006 by educator Salman Khan, a graduate of Massachusetts Institute of Technology (MIT) and Harvard Business School (HBS).

In May 2012, Anant Agarwal, professor of electrical engineering and computer science at the US-based MIT, launched edX, a free online education platform, to tap into the massive open online courses space.

EdX is a $60 million, non-profit venture launched by MIT and HBS, with more than 160 free courses in subjects ranging from literature and management to engineering and languages. Over two million students (with 250,000 from India) across the globe are enrolled on to courses from professors of 50 universities. The product, called xConsortium, aims to reach out to one billion students in the next two years.

"I failed my first mid-semester Physics exam in IIT Madras and it shook me up, because I knew that there were so many students in the world who want this education, but don't have access to it. Ever since, I've always wanted to do something about it," said Agarwal.

...but not a smooth road

It's a bumpy ride for most education start-ups. While hundreds are launched every year, only a fraction of them survive.

For instance, Mayank Jain, co-founder of **Intinno Technologies Pvt. Ltd**—a learning management system for colleges—struggled for three years, trying to convince institutions and investors in India, but failed to do so and launched **StudyPad Inc.**, which develops core curriculum content in the US.

"If our product had to make its way into an educational institution, we had to go and convince the entire faculty and admin first. Because someone else will pay for it, we had to convince them too," said Jain.

Delivering their product or service is a challenge faced by most education start-ups—61% of the companies built mobile and tablet apps in the education space; 54% of them leveraged the cloud for their start-ups while 32% used video technology and 25% made custom hardware or devices, according to an August 2012 survey by EduStars, and conducted by YS Research—research division of **YourStory Media Pvt. Ltd**.

The survey noted that most start-ups in the education space are quite small, with 61% having less than 10 employees and 25% having 10-50 employees while 4% having more than 100 employees and 11% having no employees at the time of the survey.

When asked about their monetization strategy, 25% of them mentioned per user pricing as their strategy while 21% of them use per-content, per-course pricing to monetize their product. About 32% of the companies surveyed mentioned subscription or annual contracts as their revenue model. Only 7% of them use a one-time licence payment as their pricing model. That said, 14% of the respondents use other pricing models apart from above mentioned revenue models, the EduStars survey said.

The survey concluded that there is a tendency of start-ups to use monetization strategies that provide them with a constant flow of income over a one-time payment model.

Return on investment also remains a challenge. About 39% of the companies earned up to ₹5 lakh per annum and 11% did not have any revenue at the time of the survey while 32% earned between ₹5 lakh and ₹1 crore and 25% of these start-ups earned over ₹1 crore per annum.

> India's education market could be worth ₹5.9 trillion in 2014-15 against ₹3.33 trillion in 2011-12

"The distribution channel is a challenge in education start-ups that are not online, because it essentially works as a brick-and-mortar sales business...one school at a time. Also these companies should be able to get enough traction, which according to me is at least 100 schools or customers. If they can solve these two issues, there is a lot of scope for this sector in India," said Anand Daniel, partner at Accel Partners, a venture capital firm that organizes the education start-up competition called EduStars.

The competition gets around 300 education start-up applications every year, from which only 20% get funded. "The market size is actually not so large if you see the markets of specific education products. It is a good market if a ₹1,000 product can be sold to 10,000 schools," said Daniel.

"Many start-ups adopt a 'me-too' model. I would encourage entrepreneurs to think in simple terms and out of the box. I would like to see more disruptive ideas in the education space coming out of India," said Gupta of Nexus Venture Partners.

Some experts say that parents, who are major stakeholders in students' education in India, need to take a critical look at traditional educational systems if such start-ups are to succeed.

According to Vijay Anand, CEO and founder of the Startup Centre, an accelerator in Chennai, "Parents sometimes don't find value in lateral thinking or fundamentals-building. Many don't know the value of online education. All they say is 'go get a degree in IIT or IIM'. That has to change."

INNOVATIVE OFFERINGS

- **40K Plus Education**—learning 'pods' in rural villages that offer gamified, tablet-based after-school tutoring
- **Callystro Infotech** offers gamified, activity-based learning programmes
- **Edwell Solutions** operates learning centres with an integrated multimedia tech platform to project live presentations from urban-based lecturers to multiple rural locations
- **Experifun Learning Solutions** sells kits of hands-on devices to facilitate activity-based, hands-on science learning
- **Magic Pathshala** is a mobile education programme
- **MangoReader** from MangoSense allows users to create, share and learn from stories using simple tools for mobile and Web
- **Sudiksha Knowledge Solutions** is a chain of 22 pre-schools in Hyderabad that taps educated, usually married women, with no previous professional employment experience to run franchise locations near their homes
- **Teer Designs—Classalyze**, the flagship product of Teer, is an online platform that uses classroom assessment data to measure and improve learning outcomes

Source: Pearson's 'Edupreneurs' programme

Complete DU postgrad in one year from 2015

Extra Credits, More Flexibility In Courses

Manash Pratim Gohain | TNN

New Delhi: The Delhi University is targeting the postgraduate level for its next big set of reforms. The changes aim to enable students who do the four-year undergraduate programme to get a master's degree in one year in a credit-based system where they would have more flexibility in choosing their courses.

Unveiling his vision

▶More flexible, P 7

for DU PG programmes in an exclusive chat with TOI, vice-chancellor Dinesh Singh said some glimpses of the changes would be visible from the forthcoming session itself although the full set of reforms will be introduced from 2015-16.

Speaking on the completion of a year of the four-year-undergraduate programme (FYUP), Singh also hinted that he would push for minor changes in the foundation courses. Singh said he wanted to bring in grand projects in the first year which will be trans-disciplinary.

While stressing that the proposed postgraduation reforms would have to be ratified by the university's academic and executive councils, Singh said the varsity was working on a system where an undergraduate student would be able to earn extra credits in his fourth year and get its benefit at the PG level. Trans-disciplinary programmes will also be introduced.

VC'S NEXT REFORMS

- DU to introduce **credit-based graduate programmes** from 2015-16
- Will start with experimental changes in 2014-15
- **Meta-department** concept to be brought in, under which students will be able to get credits in trans-disciplinary courses
- Students coming from DU's 4-year UG programmes may be able to finish their **master's in one year** as they will need less credits
- Changes expected in foundation courses. DU may introduce **grand project scheme** under which all 11 foundation courses will work on a stipulated 7-8 areas of research

"There is much rigidity (in PG courses). If you want to do masters in mathematics you need to do all 16 courses. I want to change that a bit

—DINESH SINGH | DU VICE-CHANCELLOR

Credit system more flexible: VC

▶Continued from P1

Delhi University is working to introduce a credit-based system at the PG level that could enable a student out of a four-year undergraduate system to get a master's degree in one year.

"I wouldn't call them one year or two year, but rather call them credit based. You are required to have a certain number of credits. If you are coming from Delhi (university) system, the requirements of credits will be much less in masters' programme than for someone from another system. The expectation is a DU student will be able to gain the credits in a year's time," Singh said.

Dinesh Singh

The VC said the credit system would be more flexible than the current one. "No one should prevent a student from taking an extra credit. Right now there is so much rigidity. If you want to do masters in mathematics you need to do 16 courses in four semesters. I want to change that a little bit. Of course, there has to be a minimum, but why do we hamper students' desire to do a little extra?" Singh said.

The university is also looking at introducing trans-disciplinary PG programmes in a meta-department environment. Explaining this, Singh said: "Take for example the mathematics faculty where we have four departments — computer science, operations research, statistics and mathematics. And the four hardly ever allow students to take credits from each other. We want to create a sort of heady mix by re-designing the content and re-creating the format, so that the credit can come from various sources. Why should we prevent a mathematics student from taking computer science or statistics courses? That sort of flexibility is what we want to bring in for all graduate programmes."

The new PG system is expected to be in place from 2015-16. Although the first FYUP batch would not graduate by then, the programme would be open for those who have done a four-year UG course from other institutions. DU students would enrol in the old courses that year.

The VC said the university was working on these plans and committees are to be announced soon. "Some experimental changes will come from the 2014-15 session. The real changes will come in one year from now. I have been speaking to department heads individually for sometime, asking them if they can build meta-department programmes so that some credit will come from project work and some from trans-disciplinary courses," said Singh.

On FYUP, he said overall it has been a "fairly satisfying" experience. The basic format will not be touched and foundation courses were there to stay. "Those who feel they need flexibility should take into account some reality of the situation," Singh said. He, however, added that there needs to be additional focus on how to teach foundation courses and that since "projects are taking away a fair amount of students' time, we are going to try and merge these projects."

Singh said he would soon announce some changes in the foundation courses which hopefully will be approved by the regulatory bodies.

For the full report log on to www.timesofindia.com

Business Standard ND 20/03/2014 P-21

IIM-C and Ivey Business School to jointly develop case studies

BS REPORTER
Mumbai, 19 March

The Indian Institute of Management, Calcutta (IIM-Calcutta) and Ivey Business School at Western University, Canada, have signed a five-year Memorandum of Understanding (MoU) to jointly develop and publish India-relevant cases.

The MoU was signed by Eric A Morse, associate dean, programmes, Ivey Business School, and Ashok Banerjee, dean of new initiatives and external relations, IIM-Calcutta campus.

Under this partnership, the two institutions will collaborate in the areas of research, development and publishing of cases, as well as case writing and case pedagogy in Indian management institutes. The MoU will also help the IIM-Calcutta Case Research Centre increase its global reach, leverage Ivey's rich knowledge base and accumulated intellectual capital in business case study research and encourage joint research and co-authorship between faculty of the two institutes.

This will support IIM-Calcutta's emphasis on case based teaching and writing to further enhance its reputation as a leader in management education. Morse said, "Ivey is the largest producer of high quality Asian business cases and we are delighted to partner with IIM-C to build on this quality portfolio. IIM-Calcutta has a tremendous reputation for its ties with industry and for attracting some of India's best talent. We believe our combined expertise and focus on quality will lead to exceptional results for both institutions and the stakeholders we collectively serve."

"The MoU will help the IIM-Calcutta faculty to list their cases in Ivey, thereby enabling faculty and students from all over the world access to such cases from a leading emerging market," said Banerjee.

India's marquee B-schools make a dash for global recognition

AMBA, EQUIS and AACSB accreditations on their must-have list of Indian B-schools

KALPANA PATHAK
Mumbai, 19 March

When a Delhi-based business school (B-school) wanted to appoint a consultant to "reinvent" itself, it was startled that for this self-improvement exercise, it would have to cough up a crore of rupees to the one it planned to appoint.

The B-school instead decided to go for an international accreditation. "It has worked out better. While we certainly spend money on getting accredited, in the bargain, we not only learn of our shortcomings and improve upon them but also enter the league of international B-schools by means of a global accreditation," said the director of the institute.

In the past few years, several B-schools have followed this trend.

Interestingly, one accreditation is not enough. B-schools now want the triple crown — Association to Advance Collegiate Schools of Business (AACSB), Association of MBAs (AMBA) and European Quality Improvement System (EQUIS).

In India, five business schools are accredited to AMBA — IIM-Kozhikode; IIM-Lucknow; IMI, Delhi; Management Development Institute, Gurgaon; and SP Jain Institute of Management and Research, Mumbai. Two B-schools have received AACSB accreditation — TA Pai Management Institute and the Indian School of Business. Two have received EQUIS accreditation — IIM-Bangalore and IIM-Ahmedabad.

To Pritam Singh, director, International Management Institute, having all the three crowns is important. "We already have the AMBA, SAQS and NBA accreditation. We have now applied for an AACSB accreditation. Our object is to have the three crowns," Singh said.

A clear advantage of jumping on the accreditation bandwagon that many B-schools see is international recognition, status and exposure. "We chose to go in for an EQUIS accreditation because this is an accreditation through which agencies outside India — our stakeholders, our partners, our potential partners — know, recognise and understand. It works like an anchor. We show up on that page," said Professor Devnath Tirupati, dean (academic) and director in-charge, IIM-Bangalore.

IIM-Bangalore says the institute is thinking about an AMBA or AACSB accreditation and it may decide to go in for one or more. "Probably more people in the US know about AACSB and they look for it as their universities and colleges look for AASCSB accreditation just like how in Europe, they look for EQUIS accreditation. Basically, accreditation is to make our presence known outside and get acceptance," added Tirupati.

The AACSB accreditation has led the Indian School of Business revamp its curriculum and formulate standards for assurance of learning

BS FILE PHOTO

The IIM-Calcutta, which received its AMBA accreditation last week, has also applied for an AACSB accreditation. Its peer, IIM-Bangalore holds an EQUIS accreditation and is thinking of going in for an AACSB or an AMBA accreditation.

Given the accrediting bodies assess a B-school on various parameters, including infrastructure, faculty, students, placements, innovation, research, teaching effectiveness and executive education among others, the gains accreditation accrues an institution explains the rush among B-schools to seek one.

For B-schools, tangible benefits of an international accreditation are many. From being able to attract global faculty and students, the B-schools say they can also create price differentiation (higher fee) and justify the same

"An international accreditation gives us recognition that we are doing fundamentally well. It allows you to know your strengths and weaknesses and assess where you stand vis-à-vis your peer institutes. It puts you in the international league of B-schools," said Saibal Chattopadhyay, director, IIM-Calcutta.

Of the 15,000 business schools in the world, approximately 4,000 are in India. However, only 0.50 per cent of these have received accreditation from an international body.

To B-schools, tangible benefits of an international accreditation are many. From being able to attract global faculty and students on campus, the B-schools say they can also create price differentiation (higher fee) and justify the same.

"Many international students and faculty members, looking at India as a study or work destination, refer to these accreditations. A B-school can attract international students and faculty by means of such accreditation. Also, it helps their international ranking," said Singh.

Tirupati, however, differs. "Not that they (B-schools) will all get too many students from abroad because we have enough good students here, but we would certainly like diversity. In a way, we are a little different from countries that bring in foreign students mainly to make money to support themselves and their programmes. We look to foreign students to bring in diversity and add value to our programmes."

IIM-Bangalore, which received its EQUIS in 2010, has been re-accredited by EQUIS for the next three years.

"For many, India is still a mystery and they may have their own doubts. Accreditation helps us when we are looking at getting recognition through global rankings. An EQUIS or an AASCSB accreditation or an AMBA accreditation is an element which they (rankings) consider," said Tirupati.

"More important, it is to bring in students — we have many student exchange agreements with top universities across the world. Exchange students have a choice and if they ask themselves why they should come to IIM-B as opposed to choosing another school, then an EQUIS accreditation or an AASCSB accreditation or an AMBA accreditation could help answer some of their questions," he added.

To Indian School of Business, the second B-school in India to receive an AACSB accreditation, it has led the institute to revamp its curriculum and formulate standards for assurance of learning, which will help measure ISB's performance in teaching management. For example, ISB continuously assesses how well it performs in achieving the learning goals for its programmes — such as critical thinking and a global perspective in decision making. "Such regular measurements drive continuous programme improvement, which is a hallmark of any top quality institution," says Ajit Rangnekar, dean, ISB.

AACSB took more than four years to complete the accreditation process and it has helped ISB provide a direct assurance of quality to students, faculty and other international schools, as well as improve ISB's ability to attract international students. "The achievement further strengthens ISB's mission to put India on the world map of top quality management education by consolidating our global position," added Rangnekar.

Given the accreditation process involves a self-assessment procedure carried out by the institution, followed by a peer review visit by an international team of auditors, the institutes spend a lot of time and effort assessing themselves. In terms of cost attached, the institutes said getting an accreditation could cost anywhere between ₹20 lakh and ₹30 lakh.

Experts say as the Indian student becomes more aware and choosy, international accreditation could emerge as one of the most important yardsticks to measure a B-school.

MAKING PRESENCE FELT

HOW GLOBAL ACCREDITATION HELPS

- **Students:** Helps chose from an over-crowded market offering MBA qualification
- **Institutes:** Helps attract international students and faculty increasing diversity on campus
- **Rankings:** Allows better international ranking, credibility, status and exposure. Widens network
- **Employers:** International companies visit campus for placements

No. OF B-SCHOOLS WITH TRIPLE CROWN IN INDIA

AMBA: 6 AACSB: 2 EQUIS: 2

Cosmic inflation no longer theory, now a fact

Evidence of ancient gravitational waves on the cosmic microwave background was found

VASUDEVAN MUKUNTH

On March 17, the most important day for cosmology in over a decade, the Harvard-Smithsonian Centre for Astrophysics made an announcement that swept physicists off their feet. Scientists published the first pieces of evidence that a popular but untested theory called cosmic inflation is right. This has significant implications for the field of cosmology.

The results also highlight a deep connection between the theories of relativity and quantum mechanics. This has been the subject of a century-old quest in physics. Cosmic inflation was first hypothesized by American physicist Alan Guth. He was trying to answer the question why distant parts of the universe were similar even though they couldn't have shared a common history. In 1980, he proposed a radical solution. He theorized that 10-36 seconds after the Big Bang happened, all matter and radiation was uniformly packed into a volume the size of a proton.

By the time it was 10-33 seconds old, its volume had increased by 1078 times — a period called the inflationary epoch. After this event, the universe was almost as big as an orange, expanding to this day but at a slower pace. While this theory was poised to resolve many cosmological issues, it was difficult to prove. To get this far, scientists from the Centre used the BICEP2 telescope.

THE MYSTERY: *Physicist Alan Guth, who hypothesised cosmic inflation was trying to answer the question why distant parts of the universe were similar even though they couldn't have shared a common history.* – PHOTO: REUTERS

Through the South Pole's dry atmosphere, BICEP (Background Imaging of Cosmic Extragalactic Polarization) 2 studies the 13.5 billion-year old residual energy of the Big Bang called the cosmic microwave background (CMB). This is a field of microwave radiation that permeates the universe. The CMB consists of electric (E) and magnetic (B) fields, called modes.

The B-mode patterns, in particular, have undergone some changes as the universe aged. It is susceptible to gravitational effects. For example, the E-mode can be twisted by the strong gravitational pulls of large galaxies into the B-mode.

However, scientists were looking for effects of what are called gravitational waves. These are waves of purely gravitational energy capable of stretching or squeezing the space-time continuum.

The inflationary epoch is thought to have set off gravitational waves rippling through the continuum. In the process, they etched their effects on the B-mode, visible today as a curling pattern in the magnetic field.

To find this, a team of radio-astronomers led by John Kovac from the Harvard-Smithsonian Centre for Astrophysics used the BICEP2 telescope from 2010 to 2012. It was equipped with a lens of aperture 26 cm, scanning an effective area of two to 10 times the width of the Moon.

Then, they used the different datasets they'd collected to subtract unwanted signals from one another until they were left with one that showed only the amount of curl.

Prof. Kovac said in a statement, "Detecting this signal is one of the most important goals in cosmology today."

The curl due to gravitational waves was confirmed with a statistical significance of 5.2 sigma — sufficient to claim evidence — but only in the part of the sky they mapped. The team has set a significance of 2.7 sigma for the rest of the sky, and future work will focus on strengthening this.

Scientists were also looking for a ratio called the tensor-to-scalar ratio. It denotes the amplitude of the gravitational waves. Its value has been found to be 0.20 plus or minus 0.05. Although theoretical predictions had pegged it between 0 and 0.3, scientists had expected it to be less than 0.2.

The higher-than-expected value means the ancient gravitational waves were more powerful than expected, and could explain why galaxies formed so rapidly after the inflation.

Now, astrophysicists from other observatories around the world will try to replicate BICEP2's results.

It is notable that gravitational waves are a feature of the theories of relativity, and cosmic inflation is a feature of quantum mechanics.

Thus, the BICEP2 results show that the two previously exclusive theories can be combined at a fundamental level. This throws open the door for physicists to explore a unified theory of nature in new light.

Times of India ND 20/03/2014 P-19

Key to long and healthy life: Eating less

Cutting Back On Food Ups Cellular Recycling, Repair

Kounteya Sinha | TNN

London: A study by an evolutionary biologist has found that eating less could make people age healthier and live longer.

It increases lifespan by protecting the body's cells from harmful deterioration and cancer. Dr Margo Adler, who led the research from the University of New South Wales in Australia, said that cutting back on food leads to increased rates of "cellular recycling" and repair mechanisms in the body.

Researchers have developed a new theory on why consuming a low-nutrient diet extends lifespan in laboratory animals.

The most widely accepted theory is that this effect evolved to improve survival during times of famine. "But we think that lifespan extension from dietary restriction is more likely to be a laboratory artifact," Adler said.

© Tetra Images/Corbis

HUNGER PANGS ARE GOOD

Lifespan extension is unlikely to occur in the wild because dietary restriction compromises the immune system's ability to fight off disease and reduces the muscle strength necessary to flee a predator. "Unlike in the benign conditions of the lab most animals in the wild are killed young by parasites or predators. Since dietary restriction appears to extend lifespan in the lab by reducing old-age diseases, it is unlikely to have the same effect on wild animals which generally don't live long enough to be affected by cancer and other late-life pathologies," he added.

The UNSW researchers' new theory is that this effect evolved to help animals continue to reproduce when food is scarce; they require less food to survive because stored nutrients in the cells can be recycled and reused. It is this effect that could account for the increased lifespan of laboratory animals on very low nutrient diets because increased cellular recycling reduces deterioration and the risk of cancer.

Lack of sleep can harm brain cells irreversibly

Kounteya Sinha | TNN

London: A new study has shown that chronic sleep loss causes irreversible physical damage to and loss of brain cells. Extended wakefulness — fast becoming common among humans — has now been inked to injury to and loss of the Locus Coeruleus (LC) neurons that are essential for alertness and optimal cognition.

The study also trashes common wisdom that catch up sleep repays one's sleep debt, with no lasting effects.

Using mice to study the effects of chronic sleep loss Sigrid Veasey, associate professor of medicine at the Perelman School of Medicine and collaborators from Peking University have showed permanent loss of brain cells. In mice, prolonged lack of sleep led to 25% of certain brain cells dying.

Veasay said, "In general we've always assumed full recovery of cognition following short- and long-term sleep loss. But some of the research in humans has shown that attention span and several other aspects of cognition may not normalize even with three days of recovery sleep, raising the question of lasting injury in the brain. We wanted to figure out exactly whether chronic sleep loss injures neurons, whether the injury is reversible and which neurons are involved."

Small is powerful: Nanotechnology based security applications in India

http://ibnlive.in.com/blogs/sauravjha/2976/65142/small-is-powerful-nanotechnology-based-security-applications-in-india.html

A stream of nanotechnology (nanotech) based products is beginning to emerge in India with applications in the security realm. Besides DRDO, serious innovation is being effected by institutions like IIT Bombay and Madras University. DRDO is of course also acting as a sort of hinge for fostering research and development (R&D) in this area of activity. India's rising proficiency can also be gauged by the fact that a number of western entities are interested in partnering their Indian counterparts for joint R&D efforts in this sphere. However to truly translate the gains from this emerging eco-system more attention will have to be paid towards augmenting relevant manufacturing facilities in the country which will hasten the pace of prototyping. Because after all it is in these 'nano-foundries" that basic R&D can be turned into usable products and help convert the stream into a veritable deluge.

At the moment nano-science inspired creations are a 400 billion dollar industry globally and this is set to grow by several multiples in the next few decades. India has been somewhat of a latecomer to this trend but is now making serious efforts to make a mark in the field. Leading the charge have been R&D efforts by the Defence Research & Development Organization (DRDO), the Department of Atomic Energy, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and other government institutes working in tandem with the likes of the IITs and the Indian Institute Of Science (IISc) Bangalore. The focus at the moment is on the materials and sensor side of things, although breakthroughs while exploring any one side of nanoscience more often than not prove attractive for a range of interests.

For instance a nanotech based drug delivery system developed by DRDO's Institute of Nuclear Medicine and Allied Sciences (INMAS) is being adopted by Cipla for its inhalers as this is expected to optimise and reduce the dosage required per inhalation considerably to treat a range of pulmonary complications. INMAS is supplying a drug formulation containing salbutamol sulphate (60 nm size) in inhalable lactose which is compatible for use with conventional inhaler devices such as the ones marketed by CIPLA. The nano-sized drug particles lead to direct alveolar deposition thereby facilitating greatly enhanced results for inhalation therapy. Incidentally this product was developed to help soldiers acclimatise faster in high altitude regions by leading to swift vasodilation of the lungs.

Such 'dual use' potential if it may be called that, seems to be a characteristic trait of nanoscience R&D and that is a key reason why research into security related applications has the potential to be a game changer for India's tech economy. At the moment, 30 of DRDO's 52 laboratories are engaged in nanotech based research. The organization has made an initial investment of some 40 million dollars into nanotech research and is looking to boost this while serving as a nodal body for both academia and industry to come together in the exploitation of nanoscience for both defence as well civilian purposes.

Till as late as 2007, nanotech was being pursued somewhat independently by a range of entities in India. But it is now clear that the country can do much better if these efforts are pooled leading to lower costs and compressed timeframes. IIT Bombay for instance has benefited greatly by tying up with DRDO's High Energy Materials Research Laboratory (HEMRL), Pune for trialling its nano-materials based hand held explosive detection device.

IIT Bombay along with IISc, with whom it has formed the Indian Nanoelectric Users Program (INUP), has come up with a proprietary polymer micro-cantilever sensor platform which uses a piezo-resistive layer to detect explosive vapours extant in the vicinity of conventional explosives. This sensor platform has been used as the basis to build a hand held device being marketed by INUP's technology startup called Nanosniff.

Nanosniff's explosive detector was tested against numerous explosives at HEMRL to check its effectiveness. Such trials while seemingly simple are actually quite complex and require specialist material handling and calibration expertise of the kind that HEMRL brings to the table. Interestingly a standalone version of this device which can be installed in public transport vehicles has also been envisaged. Such a device is expected to be powered using piezoelectric surfaces that can convert the mechanical energy released from the vibration of moving vehicles into electrical energy.

Interestingly piezoelectric properties of nano-materials are also being used by DRDO's Solid State Physics Laboratory(SSPL) to develop energy supply solutions that lead to greater soldier autonomy and endurance on the battlefield. SSPL is carrying out research on generating electricity from the shoes and garments soldiers wear by coating them with piezoelectric material that would convert mechanical energy into electrical energy as they move and this can be used to power say, health monitoring systems integrated with the soldier's outfit or locational devices built into his helmet. However this research is still in the laboratory stage and perhaps SSPL can join hands with IIT Bombay to expedite matters given the convergent aims.

Miniaturized health monitoring systems themselves are however rapidly moving towards productionization.

Nano-electrodes for vital signs monitoring and bio-sensors being developed by the Defence Bio-Engineering & Electro Medical Laboratory (DEBEL), Bangalore are nearing commercialization. These innovations will change the face of battlefield care and have the obvious potential to save lives during a conflict. Related to this is the development of silver nano-particle (NP) coated garments that being bacteriophobic would allow soldiers to operate in a zone subjected to germ warfare.

The earliest NP based products from the DRDO stable however have been in the 'material' side of things. For instance the Vehicle Research & Development Establishment (VRDE), Ahmednagar has developed corrosion resistive coatings by using metal carbon nano-tube (CNT) laced metal nanocomposites. These nanocomposites are also being used to lower the weight of aerospace structures which is helping India's strategic missile program considerably. High barrier nanocomposites are also being used by the Defence Food Research Laboratory (DFRL), Mysore for new generation food packaging systems that can keep food safe even in extreme conditions for long periods of time.

DRDO is also bringing nanotechnology to bear in supporting the development of new products related to detecting and mitigating the hazards of chemical, biological, radiological and nuclear (CBRN) warfare. DEBEL is creating CNT bio-sensors that enable speedier detection of biological warfare agents. The Defence Research & Development Establishment (DRDE), Gwalior has made a nanotech augmented chemical de-contaminant and an expression of interest was floated last year for procuring a spray device suitable for this de-contaminant. The Center for Fire, Explosive and Environment Safety (CFEES), Delhi is also close to commercializing NP based absorbents for toxic and hazardous waste. Meanwhile new generation CBRN suits with NP thermo-electric coatings are being researched by SSPL as mentioned above.

Given the level of activity it is not surprising that CBRN threat related research is a segment where countries such as the United States (US) and the United Kingdom (UK) have the greatest interest in partnering with DRDO. While DRDO is currently engaged in discussions with the US Defense Threat Reduction Agency (DTRA) on CBRN issues, it already has an MOU with the UK's Defence Science and Technology Laboratory to jointly develop CBRN related products.

But even as a spread of products begins to emerge from nanotech research in India, there are now concerns about the toxicity effects of nanomaterials. The Defence Institute of Physiology & Allied Sciences (DIPAS), Delhi along with INMAS is now actively researching the toxicity effects of NP. In fact this is also one of the areas where DRDO is increasingly teaming up with foreign organisations pursuing nanotech research. For

example, DIPAS and the US Airforce Research Laboratory (AFRL) are jointly investigating the toxicity effects of zinc oxide NP, a rather popular compound in nanotech applications.

Clearly domestic R&D both standalone and with international collaboration has begun to quicken but to sustain this momentum and emerge as a nanotech powerhouse, industrial capabilities within India have to be brought up to speed. This would involve the creation of facilities that allow rapid prototyping as well as research into reducing the cost of producing nano-materials.

Fortunately the some movement on the manufacturing side of things has already taken place. In IIT Bombay's in-house foundry a tetramethylammonium hydroxide (TMAH) based ultraviolet (UV) photolithography process was used to build the Nanosniff chemical explosive detection sensor platform which did away with more conventional and expensive laser dicing and dry etching processes. A lowering of costs was brought about due to the fact that TMAH based UV photolithography is a wet etching process which obviates the need to generate extreme temperatures or pressure, which can be an expensive proposition. It must be noted that IIT Bombay's nano-fabrication unit is a national facility and is open to a network of researchers from across India.

DRDO in keeping with its stated desire of boosting nanotech development in the country is making an investment of about 200 million dollars for a new national nano-foundry which will be based at the National Centre for Nanoscience and Nanotechnology (NCNN), Madras University. Again, this facility will be made available to both academia and industry on a time sharing basis. Incidentally NCNN is also at the centre of India's new bio-defence policy with its laboratory developing procedures and technology for continuous soil and atmosphere tests to measure toxicity on a real time basis.

While the institutional approach is certainly continuing apace, Indian industry must move quicker to take advantage of the nanotech sunrise in the country. At the moment only very big players such as Reliance Industries, Tata Chemicals, Mahindra and Mahindra, Ashok Leyland, Asian Paints, Crompton Greaves etc have put in place programmes for nanomaterials individually or in collaboration with academic institutions. It is time that small and medium scale enterprises also started to partake in the shift that is underway. In this context, the draft nanoscience and nanotechnology policy being weaved by DRDO in partnership with the National Manufacturing Competitive Council will make an interesting reading indeed.

Business Standard

PTU VC opposes UGC regulation on varsity campuses

Press Trust of India | New Delhi March 19, 2014 Last Updated at 17:26 IST

Noted educationist and Punjab Technical University VC Rajneesh Arora today came out openly against a UGC regulation, which prevents universities from setting up their campuses outside the state.

Criticising the UGC directive, he said such a regulatory mechanism was not in compliance with the market reality and in a market economy, the state universities should be allowed to open their campuses in other parts of the country as it will encourage competition and improve quality of education.

"State universities have been given a jurisdiction. They say the Mumbai University cannot operate outside Maharashtra, Delhi University cannot open campus in Chennai, Calcutta University cannot open campus in Madhya Pradesh. This kind of regulation is against the encouragement to the quality education," he said.

In its regulation issued to Vice Chancellors last August, UGC said that a university established or incorporated or under a State Act shall operate only within the territorial jurisdiction allotted to it under its Act in no case beyond the territory of the state of its location.

Arora said such a directive comes at a time when the government is trying to clear a bill in Parliament to allow foreign education providers set up campuses in India and offer degrees.

"This kind of regulatory mechanism is not in compliance with the market reality as on today. You are inviting foreign universities to have good competition. But you are not allowing your own universities to come out of their states," he told PTI.

With this regulation, students are compelled to have their education only in their local universities or otherwise they have to move out to some other institution, said Arora, who graduated from IIT Delhi in 1979.

Referring to media reports, he said in the past 10 years, 37 lakh students have come out of their states for studies.

Talking about problems in the technical education sector, he said about five-six years ago, students used to "chase" colleges or universities.

"Now the things are other way around. The universities and colleges are chasing students. The number of institutions which have come up is much larger as compared to the number of students which are available for technical education.

"Today, about 16 lakh students take admission all over the country in engineering but the number of seats which have been sanctioned by the All India Council for Technical Education is more than 20 lakhs.

A lab that allows IIT-B students to ‘tinker’ with technology and innovate

Express News Service | Mumbai | March 20, 2014 12:11 am

The laboratory, for which the 1975 batch has pledged Rs 2 crore, is managed by students and is open 24 hours. (Express)

A Facility that is fully managed by students and will enable them to walk in any time of the day without administrative hassles and experiment with machines or tinker with technologies that they find interesting and perhaps turn them into the next Mark Zuckerberg is the idea behind the ‘tinkerers’ laboratory’ at IIT Bombay.

While it is often perceived that a significant number of Indian youth is not sufficiently “hands-on”, which slows down the pace of technology-based innovation, the lab, for which the 1975 batch has pledged Rs 2 crore, is meant at bridging this gap.

“One aim of such a lab is to empower students to take systems apart, examine the components and rebuild the original systems. Tinkering helps to break the psychological barrier when you are presented with a new system, and you are scared of damaging it by tinkering with it. Unfortunately, one carries this attitude while doing basic or applied research or even developing technology. We should increase our aptitude for risk-taking in research and in introducing new technologies. How can we become a knowledge economy if we don’t have the stomach for being the introducer of new advanced technologies? The tinkerers’ lab will help change this attitude among Indian students. The government policy system must also encourage such an attitude,” said R Chidambaram, principal scientific adviser to the Government of India.

Stating that while one talks about the lower competence of students in India as compared to western countries to take things apart and put them together, Chidambaram said the auto and other mechanics in India can fix complicated things, while their western counterparts will replace them with new. “What I am saying is that the tinkering spark is there in our young people and we must boost it through these facilities,” he said.

The first phase of the laboratory was inaugurated on January 4 and has taken up a project like ‘parinat’, which aims at making a “transforming humanoid capable of mimicking a user”. The lab will be completely managed by the institute’s Students’ Technical Activities Body (STAB). “This is the second phase of the lab. Students

will have full control of facilities here — they will run the lab, train juniors and generate a culture of working with their hands and making things," said professor Devang Khakhar, IIT Bombay director.

The lab will be equipped with machines like lathe, milling, welding, drilling, electronic test equipment, 3-D modelling software, small PCB manufacturing unit, and house a small store where some common parts will be available for students to borrow for projects. The 1975 batch will provide mentoring and run workshops.

Budding entrepreneurs take the stage at IIT-M

By Amritha KR - CHENNAI

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- Photos

IIT-M students who designed the Amrutdhara water project. (Right) Glow-in-the-dark notebooks by Pizzamutiny

From T-shirts and paper cups to unmanned aerial vehicles, the students of IIT-Madras seem to have left no stone unturned in their attempt to don the entrepreneurial cap. Some of the projects were put up by the students at the recently concluded Entrepreneurship Week held at the institution.

One of the most ambitious of projects was the Amrutdhara project, taken by an IIT-M student along with two other business partners. The mandate of the venture is simple: Do away with plastic bottles.

"Every year, millions of tonnes of plastic waste get accumulated due to the use of plastic bottles. Many of these plastic water bottles do not provide quality drinking water too. Reports show that many of them are of the same quality as tap water. Despite this, people are forced to buy it," said Sandeep.

It is to put an end to this that the three-member team came up with the Amrutdhara project. Under the venture, a water filtration outlet is provided at public places where people can buy water at a cost of `3-`5 per litre. But unlike the plastic bottles, the water is provided in glasses that are washed and dried on site.

“The set up will also sell refillable bottles and provide real time analysis of the quality. If the water quality goes down a particular level, the machine will automatically shut down,” says Sandeep.

The economics of the project lies in the fact that even with the most state-of-the-art treatment system with reverse osmosis and membranes, the cost of treatment of water to package is estimated at 25 p per litre. The project, which won the runners-up title at the Indian Institute for Human Settlements’ (IIHS) National Students Challenge is now in the final stages of talks with the Puducherry government.

If bottled water is a menace, so are plastic cups. Mechanical engineering students of the IIT have come up with a project that would not only make selling paper cups profitable for the seller but also for the buyer!

“The idea is simple. Each paper cup will be printed with an advertisement. It will also have certain mobile numbers allotted by the advertiser. When the buyer sends a text to that number, he can avail discounts or other offers. So what we have is a win-win situation. Since we get to make profit through the advertisement, we sell the cups at half the price of normal cups to canteens or other sellers while for the buyers of the cup, it could mean getting discounts and offers,” says Nikhlesh, the second-year student who is part of the Admen company that took up the project.

The project has already fetched a turnover of `75,000 in 15 days, after being implemented 10 city colleges and an IT park.