Newspaper Clips
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Indian Express ND 17/11/2015 P-14

UP THE RANKS

IISc Bangalore's climb in world university rankings holds lessons for other Indian universities

THE INDIAN INSTITUTE of Science, Bangalore should be commended for becoming the country's first to crack the top 100 in world university rankings. Its success should, however, not obscure the very real problems that still affect university education in India. The Times Higher Education (THE) rankings for 2015-16 put IISc at number 99 in a list of the best engineering and technology institutions in the world. Given that IISc and IIT-Delhi also figure in the top-200 list of QS, at least the most prestigious institutions seem getting closer to competing with international counterparts. Yet, these aren't solely reflective of improved quality. They indicate that, after years of bickering over methodology and criticising a perceived anti-India bias, the country's premier higher education institutions are now actively working at raising their global ranking. IISc director Anurag Kumar admitted as much, partially attributing his institute's climb to hiring a consultant who could "send data" to QS and THE.

There are many factors hobbling scientific research in India, not least of which is lack of synergy between public institutions and private industry. The IISc is an exception, being able to attract grants from the likes of Infosys co-founder Kris Gopalakrishnan. Most publicly funded institutions lack the incentive, or the latitude, to tap private resources or leverage alumni to raise funds. The government's instrumentalist approach to scientific research hasn't helped; it has insisted engineers and scientists focus on problem-solving and incrementing existing technology, rather than engaging in the sort of moonshots that led to, say, the creation of the internet. As eminent scientist C.N.R. Rao has repeatedly pointed out, the decline in already inadequate funding — India spends only about 0.8-0.9 per cent of GDP on science — doesn't foster a climate of experimentation.

Rao also rightly blamed private enterprise for not stepping up where the government has failed. Some of the truly groundbreaking inventions of the last half-century came from collaborations between the US government and private partners. Though IISc was originally founded by J.N. Tata, Indian industry, generally, has never tried to establish institutions that train and nurture the best minds to enable scientific advancement. It also routinely underachieves when it comes to its own contributions to R&D. Public institutions like CSIR — and multinationals — file many more patent applications in India than those from India Inc. It's only when private and public agents show willingness to take risks, together and separately, that research in India will yield more pathbreaking results.

Indian Express ND 17/11/2015 P-19

GROWING INFLUENCE OF COACHING CLASSES

'Change in JEE criteria has failed to achieve the desired objective'

KANNAN M MOUDGALYA

THE RAJAT Moona Committee has come up with figures that state that after 12th marks were included to decide the rank of JEE, the number of students who were trained at coaching classes went up. There was a valid reason to include class 12 marks as students were completely ignoring schools so as to prepare for JEE. Unfortunately, this move seems to have strengthened the role of coaching classes: many more seem to have gone for coaching, possibly for combined class 12 and JEE coaching.

Every move the JEE administration makes to reduce the role of coaching classes seems to backfire. Not too long ago, the maximum number of attempts in the original JEE was reduced to two, to deny an unfair advantage to the wealthy, who can afford a lot more of coaching. Unfortunately, this resulted in students enrolling in coaching classes earlier than before, as one could attempt JEE only twice, and this increased the coaching business, naturally by those who could afford it.

There is a reason to believe that coaching classes are seen by the public as an insurance against uncertainties introduced through major changes/disruptions in JEE. If the 12th marks get removed now, it could be considered as another major change, and there is no guarantee that the role of coaching will not increase yet again.

About 10 years ago, the JEE coaching business was considered to be about Rs 10,000 crore worth. An Assocham survey in 2013 estimated the size of coaching business to be $23.7 billion and that it would reach $40 billion in 2015. For further discussion, we will take the extent of JEE-related coaching to be of the order of Rs 1,50,000 crore worth. I am tempted to say that the coaching classes have beaten the JEE system.

Rs 1,50,000 crore is a lot more than the annual budget of all IITs and NITs put-together. As a matter of fact, the cost of establishing all the existing IITs and NITs together would not have been more than this amount. Coaching classes are not a cause, but a symptom of the malaise in the system. Given that the public is bent on going to all lengths to get admission to their wards in top IITs and NITs, this will continue to happen. Their financial inputs help pay teachers of JEE coaching classes ludicrous salaries, who in turn devise methods to beat the exam. JEE coaching classes thrive because of the demand-supply mismatch in engineering education. The only guaranteed way to get rid of the coaching classes is to increase the number of good quality seats fifty to hundred fold and provide admission on demand to every reasonably good student.

Students sit with their laptops while attending a lecture. *File photo*

This is not going to happen through the traditional approach of IIT-NIT centric undergraduate education, despite the tens of new IITs and NITs that are being established. Despite this thrust, there is an all around deterioration of overall engineering education during the last decade. The increasing faculty shortage in all the IITs and NITs, including the well established ones, does not give confidence in this approach.

We can achieve the above said task of good engineering education on demand only by improving the quality of the about 5,000 engineering colleges that already exist in the country. Top IITs, NITs and select engineering colleges should be encouraged to take up this nation-building task. In order to provide an undivided attention to this important work, and to avoid any conflict of interest, they may be requested to vacate the undergraduate training space. To produce the large number of teachers required in the engineering colleges, the postgraduate and research programmes of top IITs-NITs be strengthened manifold. Hopefully, successful coaching classes can be encouraged to convert themselves into good engineering colleges. Naturally, government interventions are required in this approach.

Coming back to the Rajat Moona Committee report, most families possibly find it difficult to provide the extraordinary financial and other kind of support required to their female children to clear the entrance exams. This may be one important reason why the presence of females is abysmally low in top IITs and NITs. What I am proposing now will address this issue and also other imbalances, such as urban-rural.

The Rs 1,50,000 crore that is annually spent on coaching is a colossal national waste. Possibly it helps a small percentage of students to get better, to become good enough to secure admission in top institutions, but for all others, it is an utter waste. It may actually lead to the loss of self confidence of more than 90 per cent of our aspiring youth who are denied admission in these institutions, even after a rigorous preparation.

Burning out and the loss of childhood are other collateral damages that result in this warlike preparation.

Opponents to the proposed approach give examples, such as China and South Korea, where also a similar rigorous selection process is possibly in place. But should we not learn from good examples, such as the ones practised in the west and also in countries like Israel? It is a pleasure to see Israeli high school students spending all their energies in new ideas, projects and inventions, without having to worry about the future admission processes and round the clock preparation for entrance exams.

Finally, the approach proposed here has the potential to make us a centre of learning for the whole world. A trillion dollar education economy is certainly achievable in the near term.

(The author is a professor of Chemical Engineering, Systems and Control, and Educational Technology at IIT-Bombay)

Dainik Jagran ND 17/11/2015 P-04

गंगाजल से बनेंगी जीवनरक्षक दवाएं!

एम्स, आइआइटी कानपुर, रुड़की, बीएचयू, नीरी और एनबीआरआइ मिलकर करेंगे शोध

- स्वास्थ्य मंत्री जेपी नड्डा ने कहा, गंगा के औषधीय गुणों पर शुरू होगा समग्र अनुसंधान
- नदी को स्वच्छ बनाने के साथ दवा विकसित करना भी शोध का है मकसद

एम्स में आयोजित कार्यशाला में मौजूद केंद्रीय स्वास्थ्य मंत्री जेपी नड्डा, जल संसाधन मंत्री उमा भारती व एम्स निदेशक डॉ एमसी मिश्रा। जागरण

राज्य ब्यूरो, नई दिल्ली : गंगा को स्वच्छ बनाने और उसके जल में मौजूद औषधीय गुणों का पता लगाने के लिए केंद्रीय स्वास्थ्य मंत्रालय और जल संसाधन मंत्रालय ने मिलकर राष्ट्रीय स्तर पर शोध कराने की घोषणा की है। कुछ शोधों में भी साबित हो चुकी है कि गंगा की धारा में ऐसे गुणकारी तत्व हैं, जो हानिकारक जीवाणुओं का नाश कर देती हैं। इसके चलते गंगाजल में सड़न नहीं होती। इस तथ्य को ध्यान में रखकर गंगाजल के औषधीय गुणों पर एम्स, आइआइटी कानपुर और रुड़की, बनारस हिंदू विश्वविद्यालय, राष्ट्रीय पर्यावरण अभियांत्रिकी अनुसंधान संस्थान (नीरी) तथा राष्ट्रीय वनस्पतिक अनुसंधान संस्थान (एनबीआरआइ) मिलकर समग्र शोध करेंगे कि कैसे उन औषधीय गुणों का इस्तेमाल चिकित्सा में किया जा सकता है।

केंद्रीय स्वास्थ्य मंत्री जेपी नड्डा ने गंगाजल में 'सड़न न होने के गुणों' पर एम्स में आयोजित कार्यशाला इसकी घोषणा की। यदि विशेषज्ञ इसमें कामयाब रहे तो आने वाले दिनों में गंगाजल से जीवनरक्षक दवाएं भी बन सकती हैं। छह महीने में विशेषज्ञ अनुसंधान की रिपोर्ट प्रकाशित करेंगे और यह बताएंगे कि गंगाजल में मौजूद इन औषधीय गुणों का ट्रायल मेडिसिन में हो सकता है।

जेपी नड्डा ने कहा कि दुनिया भर में दवा प्रतिरोधी जीवाणुओं से ऐसी बीमारियां सामने आ रही हैं, जिस पर दवा असर नहीं करती। दुनिया उन बीमारियों से लड़ रही है। ऐसे में अध्ययन करने की जरूरत है कि गंगा कैसे जीवाणुओं व रोगाणुओं को नष्ट कर खुद जल को स्वच्छ कर लेती है। गंगा नदी की लंबाई लगभग 2600 किलोमीटर है। यह मैदानी इलाकों को सिंचाई के लिए जल उपलब्ध कराती है। सरकार का लक्ष्य न केवल गंगा को साफ करना बल्कि इसका उद्धार करना भी है। शोध के नतीजे आने पर वैज्ञानिक साक्ष्य से गंगाजल के औषधीय गुणों को समझने में मदद मिलेगी।

केंद्रीय जल संसाधन मंत्री उमा भारती ने कहा कि गंगा आस्था का विषय तो है, इस पर 50 करोड़ लोग आर्थिक रूप से भी निर्भर हैं। अब गंगा को स्वास्थ्य से जोड़कर भी देखा जा रहा है। इसलिए यह शोध होना जरूरी है। इससे दो चीजें पता चल जाएंगी। पहला यह कि कौन सी चीजें गंगाजल को सड़न से रोकती हैं। दूसरा यह कि नदी के उद्गम स्थल से लेकर अंतिम मुहाने तक किस जगह उन औषधीय गुणों की कमी है, जिससे गंगा की स्वच्छता प्रभावित हुई। इसलिए हरिद्वार से लेकर कोलकाता तक पानी के सैंपल लेकर शोध किया जाएगा। जिस जगह पानी की गुणवत्ता में कमी पाई जाएगी वहां उन औषधीय गुणों को बढ़ाने का प्रयास किया जाएगा।

गंगाजल में मौजूद जीवाणुभक्षी नष्ट करते हैं जीवाणुओं को

कार्यशाला में नीरी के निदेशक डॉ. एसआर वटे ने कहा कि शोध में यह पाया गया है कि गंगा के पानी में ऐसे जीवाणुभक्षी (बैक्टियोफेगस) होते हैं, जो पानी में मौजूद जीवाणुओं को खा जाते हैं। शोध में यह भी पाया गया है कि यदि सीवरेज के पानी में गंगाजल को डाल दिया जाए तो खतरनाक जीवाणु नष्ट हो जाते हैं और वे दोबारा उत्पन्न नहीं हो पाते। इसलिए गंगाजल में मौजूद जीवाणुभक्षियों का मेडिकल ट्रायल में इस्तेमाल हो सकता है। इस कार्यशाला में आइआइटी कानपुर और रूड़की, बीएचयू आदि के विशेषज्ञों ने भी अपनी बातें रखी।

Mint ND 17/11/2015 P-05

EDUCATION HUB

Flow of Indian students to US sees 29% jump

The significant increase in number of Indians pursuing education in the US comes after a lull of about five years

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NEW DELHI

The number of Indians studying in the US rose nearly 30% in 2014-15 even as that country earned some $30 billion from international students during the year.

The significant rise in the number of Indians pursuing education in the US comes after a lull of about five years.

From 102,673 students enrolled in US institutions in 2013-14, the number rose to 132,888 in 2014-15, data released on Monday showed.

The 2014-15 number is a record. Since 2010, the number of Indian students in the US has plateaued at 97,000-103,000 a year.

Greater economic stability in the US contributed to the increase in the number of Indian students going in search of quality education, Matthew K. Asada, first secretary at the US embassy in New Delhi, said while releasing the data.

In 2014-15, the US hosted 974,926 international students, a 10% increase over the previous year. India is the second leading place of origin for them, accounting for 13.6% of international students in the US, according to Open Doors, a database of students studying or teaching in the US and other countries.

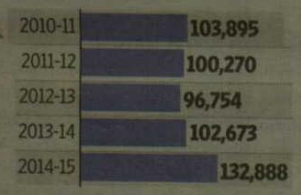
"The number of students from India increased by 29.4% to a record high of 132,888. This is the highest rate of growth for Indian students in the history of the Open Doors project, which dates back to 1954-55," the Open Doors report said.

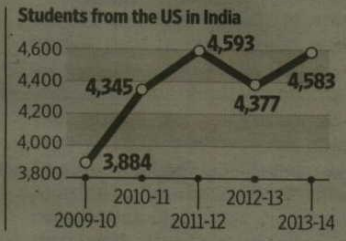
GROWTH PATTERN

From 102,673 Indian students enrolled in US institutions in 2013-14, the number rose to 132,888 in 2014-15.

Top 5 countries sending students to the US

Country	2013-14	2014-15	% change
China	274,439	304,040	10.8
India	102,673	132,888	29.4
S. Korea	68,047	63,710	-6.4
S. Arabia	53,919	59,945	11.2
Canada	28,304	27,240	-3.8





Source: Open Doors 2015

AJAY NEGI/MINT

China continues to be the biggest country of origin for international students enrolled in American institutions.

In 2014-15, 304,040 Chinese students were studying in the US, up from 274,439 the previous year.

The Chinese students' numbers increased 10.8%.

"The continued growth in international students coming to the US for higher education has a significant positive economic impact," the Open Doors report said. "International students contributed more than $30 billion to the US economy in 2014, according to the (US) department of commerce."

Open Doors reported that about 73% of all international students receive the majority of their funds from sources outside the US, including personal and family sources as well as assistance from their home country governments or universities.

"Students from around the world who study in the US also contribute to America's scientific and technical research and bring international perspectives into US classrooms, helping prepare American students for global careers, and often lead to longer-term business relationships and economic benefits," the report added.

Apart from China and India, South Korea (third), Saudi Arabia (fourth) and Canada (fifth) are the other three countries which fill US educational institutions.

Among the Indian students in the US, about 80% are studying engineering, mathematics, computer science and business, the data show.

As many as 37.5% of Indian students are pursuing engineering, the highest for any stream.

Of the total number of Indian students, 12% are pursuing undergraduate studies, 64% are enrolled in graduate degree courses, and the rest are in non-degree, post-education training and allied courses.

Though some US universities are eager to take in students in non-STEM (science, technology, engineering and mathematics) categories, they cannot ignore the preferences of students from India, said Adam J. Grotsky, executive director of the United States-India Educational Foundation.

Interestingly, while India sends over a 100,000 students a year to the US on average, 4,583 American students were pursuing their education in India in 2013-14. The data for 2014-15 is yet to be compiled.

The growth in the number of international students in the US comes at a time when it is going down in the UK, another popular destination.

In April 2014, *The Guardian* newspaper reported that "for the first time in 29 years the number of international students enrolling in England's universities decreased. In 2013, there was a 50% drop in the number of postgraduate students coming from India and Pakistan, and close to a 25% drop in the number of students who enrolled from the European Union, compared with last year".

The number of Indian students going to the UK fell from 18,535 in 2010-11 to 10,235 in 2012-13, according to a report by the Higher Education Funding Council for England.

The decline in student flow to countries like the UK has benefited the US, said Vineet Gupta, managing director of Jamboree Education, an education training and counselling company.

"Post-economic recession, the US economy now is more stable and its preeminent position as a education destination has resulted in the growth of student flow in general, more so in engineering and computer science streams," he said.

Hindustan Times ND 17/11/2015 P-17

Thinking machines: Will robots take over skilled jobs from man?

The Guardian
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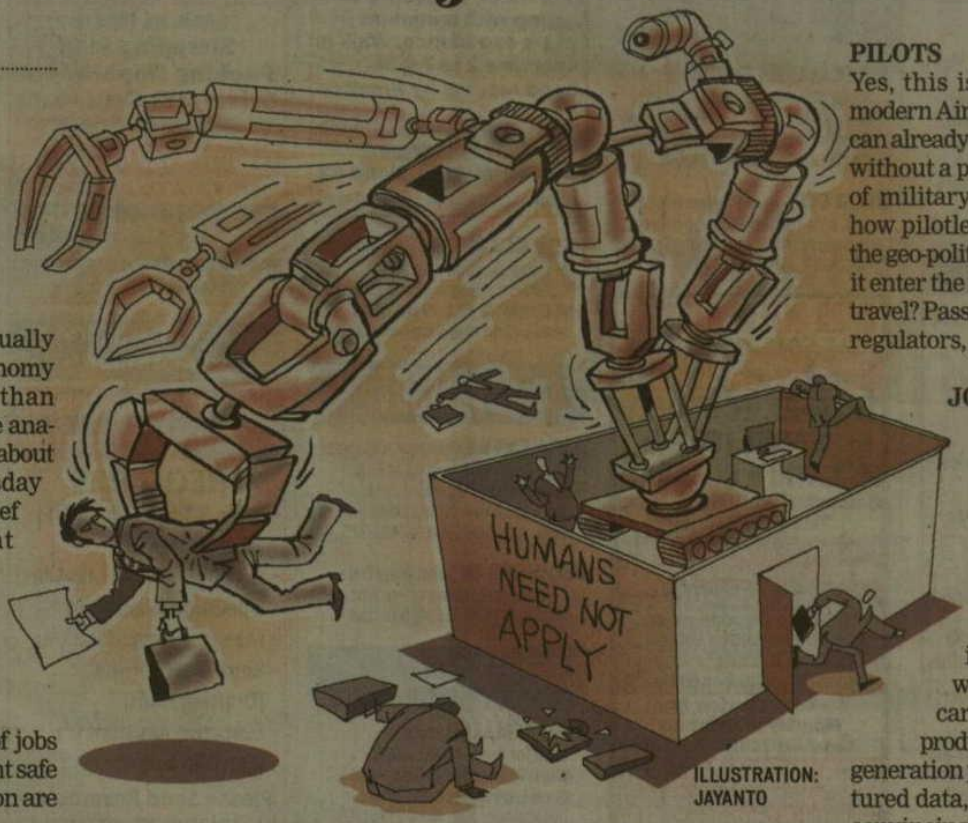

ILLUSTRATION: JAYANTO

LONDON: The fear that robots will destroy jobs and leave a great mass of people languishing in unemployment is almost as old as automation itself. And yet, the fears have been eventually proved wrong, and the economy has ended up stronger than before. But more and more analysts worry that this may be about to change. And on Thursday the Bank of England's chief economist warned that this wave of automation is threatening skilled roles. The jobs of the middle classes, with their expensive university educations, are now at risk. As a result, a huge number of jobs that were previously thought safe from machine-led disruption are firmly in the firing line.

SCIENCE

Even scientists are not safe from the march of the machines. Robots have been used in laboratories for a couple of decades to perform onerous tasks. Now advancements in automated systems and artificial intelligence have created a machine that can not only perform experiments, but interpret the results, plan further experiments and make discoveries all on its own. Adam, a scientist-robot, created in a partnership between Aberystwyth and Cambridge universities, became the first machine to independently discover new scientific knowledge in 2009. Now Eve, a newer version, continues the work for automatic drug discovery, identifying potential malaria drugs at Manchester University.

ENTERTAINMENT

Machines cannot disrupt the world of art and music, where creativity flows direct from the soul, right? But if that is the case, then how did Tupac perform at the Coachella festival in 2012 – 16 years after his murder in Las Vegas? By way of a hologram, of course. Generative art, for instance, pushes the work of creation back a step. No longer are artists creating a specific music or painting: instead, they make a bot that can endlessly create, outproducing any human artist.

A notable example is the cameo by Marlon Brando in *Superman Returns*, released two years after his death. Footage from *Superman* (1978) was mixed with computer generated effects to create a scene.

MEDICINE

For the author Martin Ford, an expert on robots, medicine offers one of the few areas where a significant number of jobs will survive the rise of the robots.

But that does not mean all of medicine is protected in the same way. Doctors are expensive to train and hire, which means they are ripe for replacement by machines. IBM's Watson project that can understand spoken questions and seek the answer from a massive database is perfect for aiding, or even replacing, a doctor when it comes to diagnoses and simple prescriptions.

Meanwhile, the Da Vinci robot is already capable of performing surgeries no human surgeon would be able to handle. Currently it is remotely operated, but add a little bit of computer vision and Watson's understanding of the human body, and who knows where we could end up?

PILOTS

Yes, this is also feasible. Any modern Airbus or Boeing aircraft can already be landed in thick fog without a pilot, while the advent of military drones underscores how pilotless flight has entered the geo-political mainstream. Will it enter the realm of commercial travel? Passengers, and of course regulators, are the main barrier.

JOURNALISM

Could you tell if the words you are reading were written by a machine? Chicago-based tech firm Narrative Science is betting big money that, if it gets its software right, you won't know – and won't care. The company's key product is Quill, a language generation platform. Put in structured data, and it will spit out a convincingly written news story about what just happened. The software is already at work writing real stories for a number of publications. It is particularly adept at breaking news from the worlds of finance and sport, where the information that comes in (on goals scored, or prices moving) is in a predictable format.

LAW

Law should be the ultimate human-only field. But a lot of the day-to-day is actually surprisingly rote. When everything goes to plan, jobs such as conveyancing, drawing up employment contracts or preparing wills can be simple. Even today, the amount of labour saved by pre-prepared templates is substantial: but as artificial intelligence improves, the need for a human lawyer in the vast majority of cases will shrink substantially.

How a course in IIT Gandhinagar is attempting to conserve our national heritage

http://www.ibnlive.com/news/buzz/how-a-course-in-iit-gandhinagar-is-attempting-to-conserve-our-national-heritage-1165431.html

Tired of seeing 'Raju loves Pinky' etched on the walls of our monuments? In a country as historically rich as we', there isn't a heritage conservation process in place till date. But that might be about to change with Gujarat's Adalaj ni vav becoming the country's first heritage site to get attention from a group of faculty, students and experts from none other than an IIT.

In a bid to give a push to the conservation of heritage and culture, Indian Institute of Technology Gandhinagar (IIT-Gn) is set to offer the first of its kind course in the country on creating 3D digital models. The ten-day course called "3D Digitization for Cultural Heritage" will focus on methods and tools of 3D digitization and its application in heritage conservation will begin with Adalaj, which is a five-storey stepwell built by Queen Rudabai in 1499. It is one of the finest examples of Indo-Islamic architecture.

The course, which is a part of the MHRD Scheme on Global Initiative on Academic Network (GIAN), is one of the first few such courses to be approved. The first batch begins on November 30, 2015 and the institute is still taking applications.

"In India, there is no awareness on conservation of heritage sites. Further, one can see how groups like the ISIS are destroying ancient monuments and heritage sites across the world. It is a critical time to begin conservation studies and technologies towards preservation," said Prof Shanmuganathan Raman, IIT-Gn faculty and coordinator of the course.

The course is being taught by a leading international figure in 3D digitization – Dr Marco Callieri, who has developed an online tool for online presentation of 3D models called 3DHOP. He is also editor of the prestigious Journal of Cultural Heritage. Under him, the participants will learn about 3D scanning technologies currently used in the field of cultural heritage. "We are aiming at developing indigenous technology to conserve India's heritage sites in the long run," said Raman.

While 3D digitization techniques and devices have been widely used in the manufacturing industry, nowadays, the technique has become an essential tool in the conservation, restoration and presentation of cultural heritage as well. The institute has already asked ASI to be able to work on Adalaj during the practical part of the course. Other heritage sites will be soon added to the list.

The intensive, 30 hours course is attracting applicants from engineering, research, manufacturing, service and government organizations as well as students of BTech, MSc, MTech or PhD and faculty from various institutes.