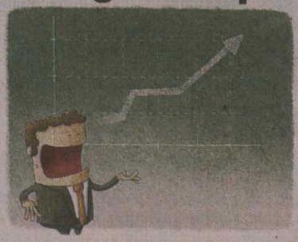
Newspaper Clips
October 14, 2014

Economic Times ND 14/10/2014 P-12

IITs Look to Plug Faculty Shortage

Institutes rope in retired faculty; HRD ministry to help by relaxing norms on faculty mobility

Filling The Gaps



MHRD is trying to relax the norms on faculty mobility to enable migration on a long-term basis from an old IIT to a new one

MHRD is also nudging the department of expenditure to revise the funds allocated to the new IITs for building infrastructure

IIT Hyderabad has invested in building a strong infrastructure for research and development

IIT Kanpur has introduced video conferencing to speed up the process of faculty selection

IIT Gandhinagar has hired retired professors from within and outside India

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New Delhi: The premier Indian Institutes of Technology (IITs) are pulling all stops to address the faculty shortage, with a little help from the ministry of human resources development (MHRD).

While the institutes are doing everything they can from roping in retired professors to short-term migration of teachers between IITs, the MHRD is working on relaxing the norms on faculty mobility. The idea is to help the IITs touch a 10:1 ratio of students to faculty.

"There is no magic wand to get the best faculty; one has to just try hard and at the same time create a good research culture. We are always aggressively looking at adding new faculty," says IIT Hyderabad director Uday Desai.

According to the latest MHRD numbers, IITs are falling short of faculty by 37%. The new norms will allow faculty to migrate in the long term – 10 years – from an old IIT to a new one or vice versa, according to a government official. Faculty can currently move between IITs only on short term deputation. MHRD is also nudging the department of expenditure to revise the funds allocated to the new IITs for building infrastructure, the official adds. This move will further ensure that the faculties find an equally competitive research environment at new IITs as is currently available at the older IITs.

IIT Hyderabad with barely 140 regular faculty members for around 1,700 students, has invested in building a strong infrastructure for research and development. "This is core in attracting the best of faculty as they look for a strong research environment before deciding on the IITs. We have the best of research equipment at IIT Hyderabad," says Desai.

IIT Kanpur, on the other hand, has recently introduced video conferencing for faculty selection. "As a large part of the faculty comes from the US, we tap our alumni network to connect with potential talent," says IIT Kanpur dean of faculty affairs, Manindra Agrawal. The institute has also set up an office in New York which helps to establish and identify contacts, he adds.

The ratio of teacher to students at IIT Kanpur is at 1:17. It has around 10 to 12 visiting faculty of which many are retired faculty members. The near term target is to reach 450 regular faculty in a few years' time, says Agrawal.

In order to attract and retain faculty, IIT Bhubaneswar is offering 30% more salary than old IITs. Apart from the short-term migration route where professors can join the new IIT from an old IIT (provided there is a consensus on faculty-sharing from the lending and borrowing IITs), it has also absorbed visiting emeritus professors. IIT Bhubaneswar has around 900 students and 75 permanent faculty members. It has also recently received endowments for chairing professors.

Ministry is nudging expenditure department to revise funds allocated to new IITs for building infrastructure

"At the professor and associate professor-levels, there is a dearth of talent but at the assistant professor level, we are comfortable. At higher levels, faculty easily finds a place in more established institutes," says IIT Bhubaneswar director Sujit Roy.

Similarly, the 20-year-old IIT Guwahati has only 351 faculty members as compared to the required 500 professors for its 5,000 students. "We are not in a crisis, though we are still struggling for the ideal ratio," says IIT Guwahati director Gautam Biswas. The institute is roping in India-born academic talent from abroad, he adds.

IIT Jodhpur too is struggling with permanent faculty for all its 90 positions. It currently has only 51 regular teaching faculty members. "We are looking for visiting faculty to mentor as well as add to the faculty pool," says an official at IIT Jodhpur who does not wish to be named. Retired professors choose offers from foreign institutes as they are far better paymasters, he says. "Earlier, we had four to five retired professors but now we have none," the official adds.

Unable to attract talent for its faculty, IIT Gandhinagar has hired retired professors both within and outside India. "These professors constitute 15% of the total faculty as recruiting top-class professors was getting difficult for a newbie like us. We celebrate these retired professors at our campus as they bring in long years of experience," says IIT Gandhinagar director SK Jain.

IIT Delhi too is not averse to the idea of roping in retired professors as faculty. "It is a good idea to engage them as they are still productive and can mentor students as well as other faculty," says dean — faculty affairs Anurag Sharma.

IITs rope in retired faculty to plug shortage

NEW DELHI: The premier Indian Institutes of Technology (IITs) are pulling all stops to address the faculty shortage, with a little help from the ministry of human resources development (MHRD).

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Business Line ND 14/10/2014 P-19

IIT-Madras eyes to be among top 50 global tech varsities

TE RAJA SIMHAN

Chennai, October 13

IIT-Madras has chalked out a six-year roadmap to try for a place among the top 50 global technological universities in all disciplines.

The Strategic Plan 2014-2020 sets out targets for each sphere of activity.

This includes academic programmes, research, collaboration with industry, human resource development, entrepreneurship, development of infrastructure and facilities, student life, placement, community outreach, international and alumni relations.

IIT-Madras will nurture faculty groups working on transformational techniques that can address societal challenges with regard to water, energy, healthcare, housing and education. A major initiative will be to develop Centres of Excellence (CoE) in areas with potentially large societal impact.

Centres have already been created in areas of water, decentralised power systems, nanotechnology, nanoelectronics, telecom, heritage structure, technology and policy and sustainable development.

The Strategic Plan envisages about 25 such centres at any point in time. Each CoE will involve 10-15 faculty members drawn from multiple disciplines.

In tune with the changing demands, the Strategic Plan aims to introduce flexibility in the curriculum by offering students a wide choice of electives. Going by the Strategic Plan, by 2020, IIT-M the institute will have a faculty that is 700-strong faculty (550 now).

JEE announces dates for downloading online admit cards for 2015 examination

http://indiatoday.intoday.in/education/story/jee-online-admit-cards/1/395456.html

The Joint Entrance Examination (JEE) Advanced 2015 admit cards will be available for download from from 10 am on Saturday, May 9 to 5 pm on Tuesday, May 12, 2015. Candidates can download their respective online admit cards from the official website by entering registration number and date of birth. Only the candidates who have successfully registered for the JEE-2015 exam can download their admit cards from the online portal.

The admit card will include the candidate's name, roll number of JEE Advanced, photograph, signature, date of birth, language selected for exam paper, address and category of the candidate in addition to the name and address of the examination centre allotted. If there are any errors or discrepancies in the Admit Card downloaded, candidates are required to inform the Chairman, JEE (Advanced) of their Zonal IIT.

A print out of the online admit card should be brought by the candidates to the exam centre on the date of the examination. Candidates will not be allowed to appear for the exam without the admit cards. At the examination centre, the candidates will be able to procure the original admit card in exchange for the online print out version. The candidates are advised to keep the original admit card safely as it will be required at the time of seat allocation and admission.

The online registration process as announced earlier will take place from 10 am onwards on Saturday, May 2 upto 5 pm on Thursday, May 7, 2015. JEE Advanced 2015 will be held on Sunday, May 24, 2015. Paper

I will be held from 9 am to 12 noon and Paper II from 2 pm to 5 pm.

The Joint Entrance Examination Advanced (JEE Advanced) is conducted jointly by the zonal IITs (IIT Bombay, IIT Delhi, IIT Guwahati, IIT Kanpur, IIT Kharagpur, IIT Madras and IIT Roorkee) for admission to Engineering and Technology undergraduate courses, B.E and B.Tech at various IITs and at ISM, Dhanbad.

Hindustan Times ND 14/10/2014

P-17

'Unshackle India's education system'

Ayesha Banerjee
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The third para of the White House release on the recent meeting between US President Barack Obama and Indian Prime Minister Narendra Modi refers to "education and job training" of youth as a priority for both countries.

"The US education system is one of the cornerstones in the development of the country. They unschackled their education system and India can learn a lot from it," says Sanjay Mehta, regional council member of the Indo-American Chamber of Commerce (IACC) and MD, Teleperformance India, a multi-channel customer service provider.

India, Mehta feels, still has to develop its education and skilling systems. A major stumbling block is that the system is not for profit in India. The embargo on foreign universities is also highly misplaced in today's circumstances. "Indians spend $4 billion to $6 billion per year, that is ₹24,000 crore to ₹36,000 crore, to get their children educated overseas. Thus, the embargo becomes dysfunctional. Most of the young people go abroad not because they really want to, but because India does not have the capacity in-house or the quality," Mehta adds. Citing the example of the BPO industry, which runs multiple shifts and has built a $100 billion business out of it, he says colleges should be mandated to run two shifts. Teachers would get more pay for more lectures. For opex funding, higher education fee should be hiked. "A Delhi University graduation degree comes for $300 or ₹15,000. An English-speaking public school charges about ₹15,000 a month." Why would parents mind paying a similar sum for a college degree if they want quality education for their children?" Mehta asks.

Sanjay Mehta

The government should make it mandatory for MPs, MLAs, secretary and deputy secretary-level and top municipal corporation officials to send their children to government and municipal schools. This would automatically ensure that the schools improve their act, he says.

BPOs, too, can play an important role to skill the youth. About 90% of BPO employees are under 25 and 50% are first-time jobbers. "BPOs spend ₹3,500 crore and ₹5,000 crore per year on skill development at the intake level. That is the budget of 300 to 500 IITs (each has a ₹75 crore to ₹120 crore budget). Both offshore and domestic BPOs need English-speaking skills and are going to create a million of jobs in the coming years. Nasscom aims to make it a ₹3 lakh crore industry by 2020 and this is the only industry that spends 80% of its revenues in the same cities that it exists," Mehta adds.

The IACC is organising its 10th Indo US Economic Summit on October 15 to 16 at Hotel Hyatt Regency, Delhi: *Convergence and Connectivity in Indo-US Economic Relations.*

HT.COM ND 14/10/2014 P-8

■ IBM, IIM-B and Catalyst will collaborates for a women leadership programme FILE PHOTO

IBM IIM-B encourages women leadership

Indo-Asian News Service

IBM along with Indian Instituteof Management, Bangalore (IIM-B) and Catalyst India WRC will launch a cross-industry women's leadership development programme that would encourage women to take charge.

The women's leadership development programme – 'Tanmatra' would leverage the best collective practical experience and research to prepare women for leadership in the Indian business community.

In this collaborative programme, IBM is the knowledge partner, Catalyst India is the research partner and IIM-Bangalore is the education partner.

A non-profit organisation Catalyst's mission is to expand opportunities for women and business."We are delighted to be the knowledge partner on Tanmatra as it supports our vision toward building women leaders not just in a uni-dimensional context but in the larger canvas of multi-industry, enabling peer-to-peer learning mentorships and community give back,"

THE COLLABORATIVE PROGRAMME AIMS TO CREATE A COMMON NETWORKING PLATFORM FOR HIGH POTENTIAL WOMEN

IBM India/South Asia Vice President - HR Dilpreet Singh said.

Open to organisations across the country, it will train a batch of 30 high-potential women across industries with at least 12 or more years experience"Women currently represent less than a quarter of the labour force employed in organisations. Tanmatra is a one-of-a-kind developmental program for high-potential women that will enable them to gain exposure to business concepts, mentoring and networking opportunities with established leaders," IIM-Bangalore Programme Director Vasanthi Srinivasan said.ough Tanmatra we can communicate with working women discuss the daily challenges they face.

Times Of India ND 14/10/2014 P-19

Bionic eye allows blind man to 'see' after 33 years

Washington: A revolutionary new bionic eye implanted into a 66-year-old blind man in the US has allowed him to 'see' for the first time in 33 years.

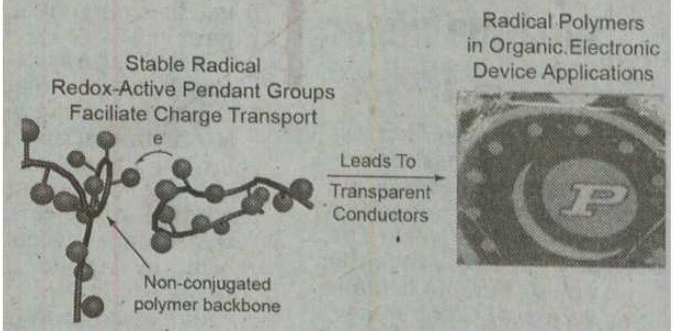
Larry Hester was diagnosed with retinitis pigmentosa when he was in his early 30s. At the time, the degenerative disease that would rob his sight was poorly understood, and there were no known treatments, researchers said.

On October 1, 2014 Hester became only the seventh person in the US to have a so-called bionic eye activated as a visual aid to send light signals to his brain. The device incorporates technology initially developed by researchers at the Duke Eye Centre; its sophisticated features were further enhanced and marketed by a company called Second Sight Medical Products.

Using wireless technology, a sensor is implanted in the eye to pick up light signals sent from a camera mounted on special eyeglasses. Paul Hahn, a retinal surgeon at Duke, implanted the sensor on September 10 and activated the device three weeks later—to the sheer delight of Hester and his family.

Hahn cautioned the device will not restore eyesight, but provide a visual aid that could help Hester distinguish a door from a wall, or a crosswalk painted in a roadway. PTI

Asian Age ND 14/10/2014 P-11



New plastic to conduct electricity in batteries, cells

Washington, Oct. 13: A new class of electrically-conductive plastics may lead to low-cost, transparent solar cells, flexible and lightweight batteries and ultra-thin anti-static coatings for consumer electronics and aircraft, scientists say.

Researchers have established the solid-state electrical properties of one such polymer, called PTMA, which is about 10 times more electrically-conductive than common semiconducting polymers.

"It's a polymer glass that conducts charge, which seems like a contradiction because glasses are usually insulators," said Bryan Boudouris, an assistant professor of chemical engineering at Purdue University.

The polymer is easy to manufacture, resembling Plexiglas, an inexpensive transparent plastic found in numerous products. However, unlike Plexiglas it conducts electricity.

"We make billions of tonnes of plastic every year. So imagine if you could produce that same kind of material at that same scale but now it has electronic properties," Boudouris said. The PTMA is in a class of electrically active polymers that could bring inexpensive transparent solar cells; anti-static and anti-glare coatings for cell-phone displays; anti-static coverings for aircraft to protect against lightning strikes; flexible flash drives; and thermoelectric devices, which generate electricity from heat.

The polymers have seen commercial use in new types of batteries.

However, finding widespread practical applications for the polymers will require increasing the conductivity another 100 to 1,000 times, Boudouris said. Polymers are strings of molecules with a central backbone and may contain side chains called "pendant groups" that dangle from the central structure.

In radical polymers, it's these pendant groups that allow charge to be transported, conducting current. To create the radical polymer, the researchers used a procedure called deprotection, which involves replacing a specific hydrogen atom in the pendant group with an oxygen atom, converting it into a so-called radical group. — *PTI*

Times Of India ND 14/10/2014 P-19

'Voice' quietly emerging as new biometric

London: Over the telephone, in jail and online, a new digital bounty is being harvested: the human voice.

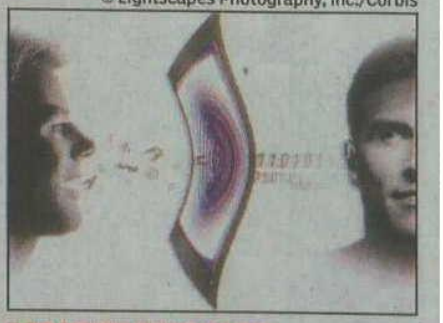
Businesses and governments around the world increasingly are turning to voice biometrics, or voiceprints, to pay pensions, collect taxes, track criminals and replace passwords. "We sometimes call it the invisible biometric," said Mike Goldgof, an executive at Madrid-based AGNITiO, one of about 10 leading firms in the field.

Those companies have helped enter more than 65 million voiceprints into corporate and government databases, according to AP interviews with dozens of industry representatives and records requests in the US, Europe and elsewhere. "There's a misconception that the technology we have today is only in the domain of the intelligence services, or the domain of 'Star Trek'," said Paul Burmester, of London-based ValidSoft, a voice biometric vendor. "The technology is here today, well-proven and commonly available."

And in high demand.

Dan Miller, an analyst with Opus Research in San Francisco, estimates that the industry's revenue will roughly double from just under $400 million last year up to between $900 million next year.

Barclays plc recently experimented with voiceprinting as an identification for its wealthiest clients. It was so successful Barclays is rolling it out to the rest of its 12 milli-on retail banking customers.



FOR YOUR EARS ONLY

Vendors say the timbre of a person's voice is unique in a way similar to the loops and whorls at the tips of someone's fingers. The technology measures characteristics of a person's speech as air is expelled from lungs, across the vocal folds of the larynx, up the pharynx, over the tongue and out through the lips, nose, and teeth. Typical speaker recognition software compares those characteristics with data on a server. If two voiceprints are similar enough, the system declares them a match. AP

Times Of India ND 14/10/2014 P-19

Nasa training 13-yr-old to set foot on Mars by 2034

Srinivas Laxman

Mumbai: Age is certainly no bar for Nasa. How else does one explain a 13-year-old girl from Louisiana in the US, Alyssa Carson, being trained by Nasa to be the first to set foot on the Red Planet in 2033-34?

Nasa spokesman Paul Foreman has recently been quoted in a BBC interview saying, "Nasa takes people like Alyssa very seriously. She is of the perfect age to one day become an astronaut to eventually travel to Mars. She is doing the right things, taking all of the right steps to actually become an astronaut."

STARTING YOUNG

Her father, Bert, embraces her passion and is giving full encouragement. To accomplish her Martian ambitions she has attended Nasa space camps in the past nine years in different countries and has learnt Spanish, French and Chinese.

"I have thought about possibly being other things, but being an astronaut was always first on my list. I do not want one obstacle in the way to stop me from going to Mars. Failure is not an option," she has told her BBC interviewer.

Seeing her commitment, the 13-year-old space addict is being invited by various international space organizations to give presentations, including Mars-One, a private Netherlands-based outfit, which is planning a one-way manned mission to the Red Planet.

HT.COM ND 14/10/2014 P-8

INTERVIEW JAMES MONTOYA

'Students with non-science fields have edge'

Antara Sengupta

It's that time of the year again when high school students all over the country will take the Scholastic Assessment Test (SAT) to pursue undergraduate studies abroad. Owned and managed by the CollegeBoard, a not-for-profit organisation in the United States, SAT is a standardised test accepted by more than 2,000 colleges and universities across the world.

In Mumbai to interact with Indian students interested in global education, James Montoya, vice president for Higher Education and International, CollegeBoard and former dean of Stanford University, speaks to HT Education about the modified SAT test format and benefits of taking the test.

What brings you to India?

When we look at the pattern of students who submit their SAT scores from India, we observe that, students are sending their scores to more than 1,200 different colleges in 24 countries. A growing number of Indian students are exploring opportunities for undergraduate studies outside the country. It is with this spirit that we decided to visit India to meet educators, students and parents to address their interests. We have profiles of 3,952 institutions on our website and more than 3,900 sites have been visited by Indian students. So, this is my opportunity to engage with students, and learn about what they want. India remains as the top five countries sending students to the US for undergraduate courses.

How is the SAT beneficial to students who decide to study in India?

The skills measured by the SAT have universal use in higher education. These include critical thinking skills in reading, writing and mathematics. In fact, many universities in India are also using SAT scores to assess students. In Maharashtra, for instance, Ashoka University, OP Jindal University and Foundation for Liberal & Management Education (FLAME) in Pune use SATs as part of their admission procedures.

SAT HAS AN EVOLUTIONARY CHARACTER THE REDESIGN PATTERN REMAINS FOCUSSED ON READING WRITING AND MATHEMATICS, WHILE ESSAY REMAINS OPTIONAL

The SAT format has recently changed and the essay section has been made optional. Do you think multiple choice questions are better indicators than subjective ones?

The SAT has an evolutionary character. Since it was conceived in 1920, we have always asked for inputs, particularly from universities as to which skills are most valuable. As education has evolved over time, the SAT has to too. If we talk about reading, writing and mathematics, the redesign remains focused on these sections.

While the essay is optional, writing is still a key component of the exam. We find that the colleges get examples of writing through a variety of means. For instance, when we met some colleges across the world, we found that some wanted to have a CollegeBoard essay, while others chose to use their own. That's why we chose to make it optional.

The new essay format involves critical thinking and analysis of the selected piece. Based on extensive research, we have found that that the analytical or evidence-based piece of writing is better aligned with the kind of writing that the student will experience in a university classroom.

Why is it important to take the SAT Subject Tests?

US universities require the SAT and subject test scores for admissions. It is important for students to keep all options open. Indian students have very high aspirations, and some students lose out because they don't take the subject tests. It is one way for students to show universities their expertise in a particular field. This is becoming more important in the competitive environment in colleges abroad, particularly for international students.

One of the major changes in the university admissions is that students are applying from all over the world. Quite obviously, these universities are not familiar with all the high schools. Thus, they need a standard measure to help them better understand how marks obtained in one school of a country are better than the other school in another country.

Do universities provide scholarships based on a student's SAT scores?

Some institutes have further expectations from their scholar students. Overall, the talent is measured on the basis of school marks, grades and test scores. Merit-based aids by universities consider top test scores. Students should do their very best in school, as that is the best preparation for SAT. Colleges in the US have increased the amount of international scholarship to almost US$1 billion.

Based on your travel experience, what have you observed about Indian students going abroad to study?

Indian students perform very well in the SATs, as they have a strong sense of humanity, learning, understanding, and are aware of culture and community. However, as per my own experience, Indian students show an inclination to science and technology-related fields. When we look at the most number of hits on our website, we see students looking at institutions such as MIT, Stanford and Cornell that have strong science programmes. Also, we have observed an affinity to culture studies.

Institutions in the US are always pleased to receive applications from Indian students who exhibit interest in social sciences, fine arts and humanities, as it displays that the applicant stands out from the crowd. It isn't about a deficiency, but a reality demonstrated by Indian students.

In my own experience as the dean of admissio at Stanford University, I was always impressed by Indian applications that show interest outside science and technology fields or those interested in both science and humanities. Universities in the US offer the opportunity to study both together, and encourage diverse interests from Indian students.

Millenium Post ND 14/10/2014 P-13

NIELIT students can now join formal degree courses

MPOST BUREAU

NEW DELHI: Students who have cleared full-time non-formal computer courses at National Institute of Electronics and Information Technology (NIELIT), formerly DOEACC, can join degree courses in select universities, telecom minister Ravi Shankar Prasad said on Monday.

'This is a changing India which is looking for opportunity. NIELIT is doing well. Its students can now join formal courses like MCA, MTech and MBA across three universities. This will give more opportunity to students,' Prasad said at a workshop organised by NIELIT.

NIELIT's managing director Ashwini Kumar Sharma said that the move will benefit around 9 lakh students irrespective of the year they have cleared their course.

NIELIT MD Dr Ashwini Kumar Sharma and Intel South Asia MD Debjani Ghosh after signing an MoU in the presence of Communications & IT and Law & Justice Minister Ravi Shankar Prasad

'Till date we have trained over 20 lakh students which includes short term courses also. About 9 lakh students who have completed long term courses will be able to take admission in three universities who have signed agreement with us,' Sharma said.

NIELIT has signed memorandum of understanding with Sunrise University at Alwar, Rajasthan; AISECT University of Madhya Pradesh and Dr CV Raman University at Bilaspur, Chhattisgarh.

The minister said that NIELIT should look at the training methodology that changing India needs where people have started learning using mobile phone.

'NIELIT has good presence in East. It should open more centres to meet skill training targets under Digital India programme. It should increase its presence in southern part of country, states like Gujarat, Madhya Pradesh,' Prasad said.

NIELET has 31 offices across India and conducts training through about 800 institutions. It offers computer programming courses — 'O' Level (Foundation), 'A' Level (Advance Diploma), 'B' Level (MCA equivalent) and 'C' Level (M-Tech level).

Students who have completed 'O' level course at NIELIT can get lateral entry into third semester of Bachelor of Computer Application, 'A' level student can get lateral in MCA programme, and B level in first semester of Master of Technology in Sunrise University.

For other two universities, NIELIT students will need to clear a bridge exam.

Sharma said due to advancement in course curriculum and availability of modern facilities at NIELIT, revenue of the institute has increased from Rs 155 crore in 2012-13 to Rs 242 crore in 2013-14.

NIELIT on Monday signed an agreement with computer chip major Intel to align its courses with industry requirement and increase employability skills of students.

Business Line ND 14/10/2014 P-7

How India learnt to tackle cyclones

AMITABH SINHA
NEW DELHI, OCTOBER 13

OF THE 23 cyclones in the last 300 years that have each resulted in loss of more than 10,000 lives, twenty have formed in the Bay of Bengal and affected India. Almost 75 per cent of the cyclones that have killed more than 5,000 people during this time have been in this region. This, despite the fact that only about seven per cent of the world's cyclones in a year are generated in this region. And, on an average, cyclones in the Bay of Bengal and the Arabian Sea are of moderate intensity compared to hurricanes in West Atlantic and typhoons in West Pacific regions.

The handling of Phailin last year and the Hudhud now is an indication that things are likely to change for the better. Phailin left 38 people dead, and till Monday evening, the death toll from Hudhud was only 25 — 21 in Andhra Pradesh and four in Orissa.

One reason for the large number of fatalities in the past is that the Indian coastline is densely populated. Also pertinent is the fact that forecast and warning system for cyclones were not well developed.

This second cause is what started getting addressed about five years ago, with coordinated action at many levels: new infrastructure in the form of weather observation stations and faster computers, scientific capacity building through tie-ups with advanced countries, faster communication lines, disaster management plans and an elaborate coordinating mechanism.

But the key to success was an accurate and timely forecast system. That responsibility fell on the shoulders of Indian Meteorological Department, and the experience of Phailin and Hudhud has showed that progress has been made.

For the Orissa super-cyclone of 1999, the IMD sent out warnings 24 hours in advance. In contrast, accurate and detailed warnings were issued five days before Hudhud struck. "We have consistently improved on our cyclone forecast and warnings over the years. After every cyclone, we calculate the error margin in our forecast and the actual event. This error has been reducing every year. We are now on a par with the Pacific warning system in Japan and only slightly behind the Atlantic warning system in the US," said M Mohapatra of IMD's cyclone forecast division.

Mohapatra said significant upgradation in infrastructure enabled improved forecast. Remote sensing data from satellites have provided vital parameters to IMD's cyclone models. The computing ability has been scaled up by several notches. At least 30 observation stations have been set up in the Bay of Bengal and the Arabian Sea by the National Institute of Ocean Technology, Chennai. An agreement was signed in 2010, which enabled interactions of Indian weather scientists with their US counterparts. "The result is that today we are able to make accurate predictions about cyclones," Mohapatra said.

But the success story is not due to the IMD alone. U C Mohanty of the Centre for Atmospheric Sciences at IIT, Bhubaneswar, said that a strategy was coordinated by a variety of agencies.

"The government treated this issue with urgency. In 2009, a Forecast Demonstration Programme was set up. It was hosted by the IMD but had almost every relevant agency on board. The National Centre for Medium Range Weather Forecasting, the Air Force, the Navy, the Department of Space, academics from IIT Delhi and IIT Bhubaneswar were put in a group to coordinate. The effort has yielded results," Mohanty said.

"There has been lots of improvement in technology, modelling capabilities and in our infrastructure as well... The days when tens of thousands used to be killed by a cyclone are over," Mohanty said.

Cyclone forecast and early warning system forms just one part of the National Cyclone Risk Mitigation Project (NCRMP), working since 2006 under the National Disaster Management Authority. The project seeks to ensure effective response, rescue and relief after the cyclone has struck. Phase-I of the project, covering Orissa and Andhra, involves construction of cyclone shelters, roads, bridges and coastal embankments. These shelters have saved thousands of lives during Phailin and Hudhud.