Newspaper Clips

December 14, 2011

Nav Bharat Times ND 14-Dec-11 P16

हताशा की ओर धकेलती तकनीकी शिक्षा

आईआईटी छात्रों की आत्महत्याएं कोई ऐसी बात कह रही हैं, जिसे हमारी सरकारें सुनने को ही राजी नहीं हैं

शशांक द्विवेदी॥

तकनीकी शिक्षा के मौजूदा सत्र में इस बार पूरे देश में 2 लाख से ज्यादा यानी करीब 30 फीसदी सीटें खाली रह गईं। अकेले उत्तर प्रदेश में 70 हजार और राजस्थान में 17 हजार सीटें खाली रहीं। यह पहली बार हो रहा है कि एक तरफ तो सरकार उच्च शिक्षा के बाजारीकरण पर जुटी है, दूसरी तरफ लोगों का रुझान इस तरफ कम हो रहा है। आज देश में हजारों इंजीनियरिंग कॉलेज खुल गए हैं और लगातार खुल भी रहे हैं। लोगों को यह एक अच्छा व्यवसाय नजर आने लगा है। पर क्या इन संस्थानों में गुणवत्तापूर्ण शिक्षा की गारंटी दी जा सकती है? हालत यह है कि एक ओर देश की उच्च और तकनीकी शिक्षा पर सवाल उठ रहे हैं, दूसरी ओर सरकार इसे और ज्यादा मुनाफा कमाने का साधन बनाने में जुटी है।

मुनाफे का धंधा

पिछले दिनों योजना आयोग ने इस संबंध में अपना ताजा दृष्टिकोण पत्र जारी किया है। इसके मुताबिक 1 अप्रैल 2012 से शुरू हो रही 12वीं पंचवर्षीय योजना में उच्च शिक्षा, खासकर तकनीकी शिक्षा के क्षेत्र में निजी क्षेत्र को बड़ी भूमिका देने के लिए अनुकूल स्थितियां बनाने की जरूरत है। अभी इस दृष्टिकोण पत्र पर सरकार की मुहर नहीं लगी है, लेकिन यह सुझाव पिछले वर्षों में उच्च शिक्षा के बारे में चली चर्चा के अनुरूप ही है। विदेशी विश्वविद्यालयों को भारत में अपनी शाखा खोलने की इजाजत के साथ भी यह बात जुड़ी है कि वे मुनाफे की संभावना दिखने पर ही यहां आएंगे।

नई जाति प्रथा

शिक्षा मंडी में क्रय-विक्रय की वस्तु बनती जा रही है। इसे बाजार में निश्चित शुल्क से अधिक धन देकर खरीदा जा सकता है। परिणामस्वरूप शिक्षा में एक भिन्न प्रकार की जाति प्रथा जन्म ले रही है। धन के आधार पर आईआईटी, एमबीए, सीए, एमबीबीएस आदि उपाधियों के लिये प्रवेश पा लेने वाले उच्च भावना और धनाभाव के कारण इससे वंचित छात्र हीनभावना से ग्रस्त रहते हैं। हम अपने ज्ञान को व्यावहारिक नहीं बना पाए है। नंबरों की होड़ वाली शिक्षा प्रणाली में तो बस रटे गए ज्ञान का मूल्यांकन लिखित परीक्षाओं के माध्यम से होता है। यह प्रणाली बच्चों को तनावग्रस्त करती है और वांछित सफलता न मिलने पर खुद को नुकसान पहुंचाने वाले अप्रिय कदम उठाने के लिए बाध्य करती है। नेशनल क्राइम रिकार्ड ब्यूरो के मुताबिक 2006 से 2010 के बीच छात्रों की आत्महत्याएं 26 प्रतिशत बढ़ गईं। 2006 में 5857 का यह आंकड़ा 2010 में 7379 तक पहुंच गया। वास्तविकता में यह संख्या इससे भी ज्यादा हो सकती है। आत्महत्या करने वाले छात्रों में सबसे ज्यादा संख्या देश के प्रमुख मेट्रो शहरों बंगलूरु, दिल्ली और मुंबई की है।

पिछलें कुछ सालों से आत्महत्या की सर्वाधिक घटनाएं आईआईटी कॉलेजों में सामने आई हैं। मानव संसाधन विकास मंत्री कपिल सिब्बल ने लोकसभा में वरुण गांधी के सवाल के लिखित जवाब में बताया कि 2008 से 2010 देश के सभी आईआईटी तथा उच्च तकनीकी संस्थानों में कुल 24 छात्रों ने इस प्रकार का आत्मघाती कदम उठाया। इन सभी मामलों की जांच करने वाली समितियों ने पाया कि अवसाद, पढ़ाई के बोझ और सहपाठियों के प्रदर्शन के दबाव में आकर छात्रों ने यह कदम

■ जीत का यह जज्बा कितनों के लिए है

उठाया। आईआईटी कानपुर में पिछले 5 सालों के भीतर हुई 9 छात्रों की आत्महत्या के मामले ने यहां की ग्रेडिंग प्रणाली और शिकायत निवारण तंत्र पर प्रश्नचिह्न लगा दिया है।

आत्महत्याओं के कारण तलाशते हुए कभी इसकी बुनियादी वजहों पर बात नहीं की जाती। ज्यादा से ज्यादा वेतन वाली नौकरियों को ही सफलता के आदर्श के रूप में प्रतिष्ठित कर दिया गया है। जबकि हकीकत यह है कि यही प्रतिष्ठा छात्रों को अवसाद की ओर धकेल रही है। आईआईटी में आने से पहले छात्रों की पृष्ठभूमि पर गौर करें तो इसे बेहतर तरीके से समझा जा सकता है। शहरी मध्यवर्गीय परिवार मीडिया में आईआईटी से निकलने वाले छात्रों का ऊंचा पैकेज देखकर कर अपने बच्चे को इंजीनियर बनाने का सपना पालने लगते हैं। बच्चा दसवीं कक्षा से ही अपने माता-पिता के सपनों का बोझ ढोने लगता है। स्कूल से कोचिंग, कोचिंग से स्टडी रूम का चक्र उसके स्वाभाविक विकास को एक खास दिशा में मोड़ देता है।

प्रवेश परीक्षाओं से लेकर सिलेबस तक में जो भी बदलाव किए जा रहे हैं, उन सबका एक ही मकसद है। दुनिया के बाजार के लिए भारत में पेशेवर लोगों की फौज कैसे तैयार की जाए। सरकार को इस बात से कोई लेना-देना नहीं है कि उसके कदमों से देश का या देश की जनता का क्या फायदा होने वाला है। इस कदम से होगा क्या? इससे तकनीकी ज्ञान की सस्ती फौज ही हम तैयार कर पाएंगे, तकनीकी क्षेत्र में नया कुछ नहीं कर पाएंगे।

कॉरपोरेट की फिक्र

पिछले दिनों इनफोसिस के मानद चेयरमैन एनआर नारायण मूर्ति तथा उद्योग एवं व्यापार जगत की सर्वोच्च संस्था फिक्की ने देश में उच्च एवं तकनीकी शिक्षा के गिरते स्तर पर चिंता जताई थी। इनका कहना है कि उद्योग जगत के 65 फीसदी हिस्से को इससे सही स्नातक नहीं मिल रहे हैं, न ही यहां से निकलने वाले छात्र उद्योगपतियों की कसौटी पर खरे उतर पा रहे हैं। असल में उनकी पूरी चिंता कॉरपोरेट से जुड़ी हुई है। तकनीकी शिक्षा के बुनियादी और व्यावहारिक पक्ष से उनका कोई लेन-देना नहीं है। वे कह रहे है कि हमें तकनीकी स्नातकों को कार्यकुशल करना पड़ता है, यानी उन्हें कुछ महीनों की ट्रेनिंग देनी पड़ती है, जो इंडस्ट्री के लोग नहीं चाहते। उनका सीधा सा मतलब है कि आईआईटी ऐसे स्नातक पैदा करे जिनका कॉरपोरेट के लोग पूरा दोहन कर सके। आज जरूरत है ऐसे तकनीकी ज्ञान की जो वास्तविकता के धरातल पर टिका हो और जिसे हम अपने देश की परिस्थितियों के हिसाब से प्रयोग कर सके। इसके लिए कॉरपोरेट निर्धारित मापदंडों के पीछे न भागकर हमें राष्ट्र की समस्याओं के अनुकूल मापदंड बनाने होंगे।

Hindustan Times ND 14/12/2011 P-1

(ht education)

Common entrance launched for AICTE-approved institutes

About 3000-4000 institutes to be covered by CMAT

HT Education Correspondent

htteducation@hindustantimes.com

Registration has started for the first-ever Common Management Admission Test (CMAT) 2012 conducted by the All India Council for Technical Education (AICTE). The three-hour test will be conducted from February 20-28, 2012, in 61 cities.

Following a Supreme Court order, the AICTE launched the national test to replace state-level exams and reduce the pressure of students writing multiple exams. CMAT scores are to be used for entry to post-graduate management courses both at degree and diploma levels in AICTE-approved institutions/university departments. There are about 4000 AICTE-approved institutions for MBA/PGDBM, for four lakh seats, in the country.

"We expect all AICTE-approved institutes will take it," says KP Isaac, member secretary, AICTE. "Most states will not have their entrance examinations," so institutes would accept CMAT scores. He expected 3000-4000 institutes to be covered by the new test.

Since this is the first year of the test, it is learnt that institutions can accept the scores from one of the following five tests – CAT, MAT, GMAT of the US and CMAT in this admission cycle.

According to Isaac, the CMAT will be mandatory for institutes to consider for admissions in 2013. He also says that now as well as even from 2013, the CMAT will exclude about 100-200 institutions, such as the IIMs, business schools of IITs and a number of Central and state universities, including the University of Delhi. "All those which are not governed by AICTE will continue with their tests," says Isaac.

Minority institutions will conduct admissions as per the provision available for such categories.

Important dates

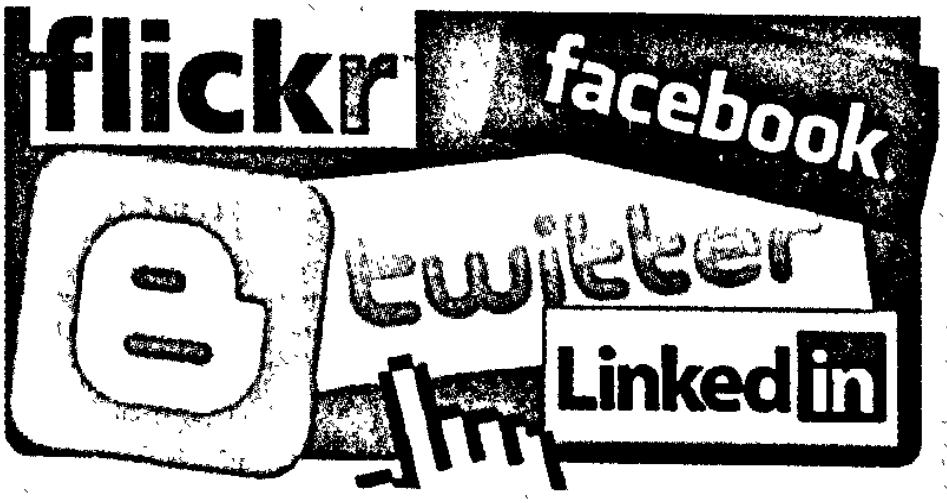
- Last date for online registration: January 9, 2012
- Online test dates: February 20 to 28
- Result declared: March 11

CMAT pattern

It will have four sections: quantitative techniques & data interpretation, logical reasoning, language comprehension, and general awareness, each with 25 questions and carrying 100 marks

Pioneer ND 14.12.2011 P-8

Internet is not free of restrictions



There has recently been some controversy regarding the contents of some social network sites. In this connection I wish to state that I have carefully examined and perused the contents, pictorial and other, regarding the objectionable material. The pictures and other contents show religious figures of certain communities in a highly offensive and even pornographic manner. Such material is bound to create religious hatred and lead to most undesirable consequences.

It must be realised that India is a country of great diversity. We have a large number of religions, castes, languages, ethnic groups, etc. The only way our country can be held together is by giving equal respect to all communities. The media and all persons should take care that the religious and other sentiments of any community should not be hurt. The pictures I have seen not only hurt the religious sentiments of members of certain religious communities, but are also outrageous, inflammatory and egregious, and are bound to disturb peace and result in serious law and order problems.

I have said several times earlier that while I strongly support freedom of the media, no freedom is absolute, and all freedoms are subject to reasonable restrictions in the public interest. Thus, Article 19(1)(a) of the Constitution which provides for freedom of the media, is subject to Article 19 (2) which states that restrictions can be placed on this freedom in the interest of public order, decency and morality.

Section 153A of the Indian Penal Code makes it a criminal offence to promote, or attempt to promote disharmony, feelings of enmity or hatred or ill-will between different religious communities or groups, or do an act which is prejudicial to the maintenance of harmony between different religious groups or communities, and which is likely to disturb the public tranquility.

I have carefully perused the material in question and am of the opinion that there can be no manner of doubt that they attract Section 153A of the Indian Penal Code. Hence I am of the view that such offensive material should be removed or filtered out from the social network sites on the internet immediately.

Markandey Katju
Chairman
Press Council of India
New Delhi

Hindustan Times ND 14/12/2011 P-4 (ht education)

La Trobe inks MoUs with leading Indian institutes

DTU, IIT-Madras, Presidency College look at tie-ups

HT Education Correspondents
■ hteducation@hindustantimes.com

In a move to strengthen its presence in India, La Trobe University Australia, signed MoUs (memorandum of understanding) with major institutes like Delhi Technological University, IIT Madras, Presidency College and Bengaluru University.

Talking about the partnerships, Professor John Rosenberg says, "La Trobe University looks forward to welcoming more Indian students and building strong research collaborations with Indian institutions. The partnership will lead to collaborative research, joint student projects, student and staff exchange, study tour, internships, and articulation opportunities. Discussions are on for joint degree programmes in undergraduate studies and joint degree programmes in postgraduate studies."

Talking about the Melbourne campus, Prof Rosenberg said, "it is the second largest university campus in Australia. The university has been teaching Indian history, Sanskrit and Hindi since its inception in 1967 and also has one of the largest libraries housing books and manuscripts on Indian history and language in Australia. The University Library was opened by the then Indian prime minister Indira Gandhi in 1968".

Speaking on the collaboration with IIT Madras, he added, ""The IIT-La Trobe collaboration is an extremely important one. This relationship could grow bigger with our other institutional partners, including the prestigious National University of Singapore (NUS), joining for future collaborative projects (NUS is a partner university for both La Trobe and IIT). The focus of the relationship will be to develop collaborative research projects, joint PhD opportunities etc."

Professor Rosenberg also announced a scholarship worth $5,000 for an IIT student to undertake an internship program at La Trobe University. The selected student could use this scholarship for travel and living expenses.

UNIVERSITY OF WOLLONGONG TO SET UP CAMPUS IN INDIA

University of Wollongong (UoW), one of Australia's leading research and higher education institutions, has plans to set up a campus in India.

Representatives from UoW signed a MoU with Arun Kumar Jagatramka, chairman and managing director of Gujarat NRE, to develop a campus in Ahmedabad.

UoW's international medical bionics and nanotechnology expert Gordon Wallace and deputy vice chancellor (research) Judy Raper, were in New Delhi recently to make the announcement.

The university is also forging links with India in the areas of research. "We are holding talks with Indian corporations and research institutions about opportunities for collaboration in a range of high-tech research areas such as medical bionics and nanotechnology. Some Indian institutions on our list include IIT-Bombay, IIT-Delhi and the AIIMS and few pharma and automobile companies," says Raper.

Pioneer ND 14.12.2011 P-10

A new IIM?

ROHIT BANSAL

When our Mecca of management recognised its very best, I thought it'll be headline news. I was wrong. It's been three days since 40 Golden Jubilee Distinguished Alumnus Awards were given by IIM-Ahmedabad, but try asking for all the names. News reports tell us Harsha Bhogle, Mallika Sarabhai, Sanjeev 'Naukri' Bikhchandani, SB 'Sintex' Dangayach, and Chandrika 'Grammy' Tandon made the cut. Through private channels I know that Deep 'make my trip' Kalra, Vinayak Chatterjee of Feedback Ventures, Ashok Alexander and Ajay 'Mastercard' Banga were honoured. Calls to the *alumni* cell resulted in a comical chain mail, one even requesting for my "name as per certificate." An unusually helpful man, one Hariharan, lobbed the ball to the Dean of Placements and Alumni Relations Atanu Ghosh, who was away. Finally, I ambushed one of the distinguished awardees. No festschrift had been given. All that the awardee saw was a hurried power point slide on each winner. Speeches added up to more than a few hours. But trust IIM-A to be IIM-A. The power point has just landed from Prof Ghosh: http://www.iimahd.ernet.in/goldenjubilee/images/distinguished-alumnifinal.ppt. Cheers , Sir!

At the risk of stamping on some IIM egos (and annoying a dearest entrant into our family) the style is somewhat different in Hyderabad's Indian School of Business (ISB). Like Avis, versus Hertz, ISB knows it is considered second best: The Financial Times says IIM-A is 11th and ISB is 13th. Perhaps, that's why ISB tries much harder!

I was at ISB ten years and a few hours after Atal Bihari Vajpayee inaugurated a 260-acres expanse of bare rock and ravine in Gachibowli. A visiting IAF commander was negotiating an air pocket with his slides. A child decided to challenge him. The mother made no attempt to vacate the Khemka Auditorium. To my surprise, the host audience looked indulgent. I wondered, until Dean Ajit Rangnekar, an IIM-A *alum*, explained: "25 per cent of our students are married. They have families on campus. So, we not only allow (their) children (in), we passionately encourage the children to express themselves...(and) as you noticed, they give feedback on what we're saying!"

A B-school designed to house families for the entire year of its flagship management programme (ISB has a Spouses and Family Association, a special children's section in the library, and a day-care facility) attracts experienced applicants. These practicing managers, their average work experience being 5 years plus, have insight to share in class. In comparison, 'work ex' is relatively alien for the 2,750 students India's 13 IIMs select annually. That's because IIMs select largely on the basis of scores in the Common Admission Test (CAT), arguably one of the toughest tests on the planet. CAT penalizes non-mathematical applicants heavily, more so in each progressive avatar. So mint-fresh IITians swamp the selections. At IIM Rohtak, where I recently spoke, 87 per cent of the inaugural batch of 48 were engineers, just four having 'work ex' of over 3 years. 77 per cent had less than 12 months of work-life exposure. Quant jocks are great. It's just that their math is so overwhelming (and their experience so little) that education here takes a number-crunching form.

Unlike ISB, the IIMs are under RTI. So, the safest option for the CAT question setter is to script the most difficult test and then skim the top one per cent for the first 51 per cent seats. Being privately owned, ISB enjoys flexibility. In the present class of 2012 of 573, there's a 65:35 between 'rocket scientists and poets,' the latter being the in-house code for non engineers! The school uses the Graduate Management Aptitude Test (GMAT) to draw a floor level, but the ultimate criteria is to recruit variety. A visible manifestation is ladies one sees in the class. The 2012 ISB class has 165 women, a healthy 28 per cent. In contrast, among my 48 friends in IIM Rohtak, there are just three ladies. IIM-A has a ratio of 93:7. Only IIM-Kozhikode has been selecting around 30 per cent women.

Illustratively, ISB has selected a decorated UN peace keeper for his real-life perspective. Not too long back, a very senior lady entrepreneur was a smash hit in the class not just for her sari and keds, but her wisdom too. IIMs, on the other hand, can't look at anyone outside the first 51 per cent on the merit list, the CAT score being the major determiner. By law, they need to reserve up to 49 per cent of total seats for SCs, STs and OBCs. The entry criteria for these disadvantaged citizens is lower, with its unstated impact, especially when combined with low work ex. ISB seeks no affiliation, and thus has zero reservation. In fact, it features in an All India Council of Technical Education (AICTE) blacklist!

Flexible matrices help. In ISB this year, 300 student volunteers assisted the admissions committee prepare a long list from the raft of applications, reading through each essay on criteria such as coherence of career plan. Vijayalakshmi Bommaraju, before ISB an Infosys *alum* in the US, saw someone with two years of 'work ex' and a stated plan to be a CEO right after ISB. The applicant's 710 in GMAT counted for less than a competing application with a more logical career plan and a lower score of, say, 700. The IIMs, even IIM-A, need to pay heed. A reform agenda authored by Maruti's RC Bhargava needs a relook.

(The writer is CEO and Co-Founder, India Strategy Group, Hammurabi & Solomon Consulting Email: rohitbansal@post.harvard.edu)

Statesman ND 14/12/2011 P-11

Stirling and Schumacher

German scientists have built an engine that may just be put to work in biological systems, says s ananthanarayanan

WHILE it may be true that small is beautiful, function does not always stay unchanged when dimensions are reduced. This is particularly true about heat engines, like the steam or petrol one. These eggines work because of the force of molecules of a hot gas and the system breaks down when the moving parts are reduced to a size comparable with the movement span of the molecules. Yet a pair of researchers at the University of Stuttgart and the Max-Plank Institute for Intelligent Systems, in the same city, reports in the journal *Nature* that they have found that a heat engine of the size of microns is able to work and may show the way for energy efficient machines at these dimensions.

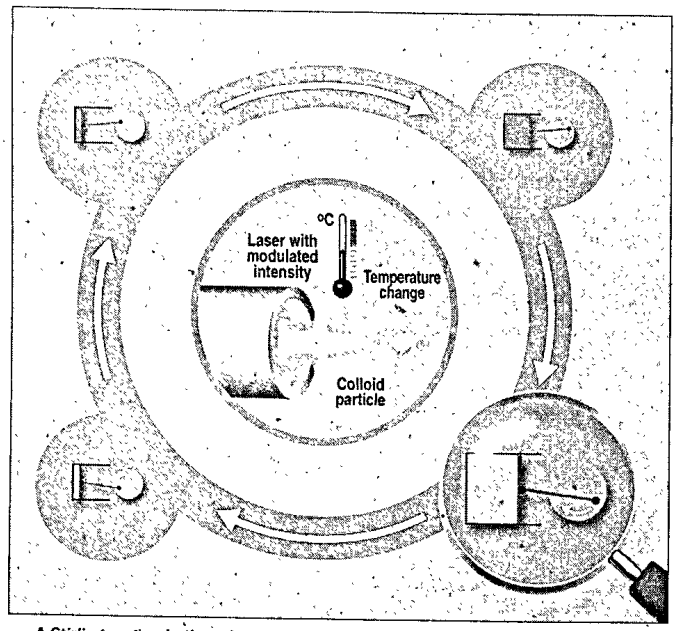
This is a device that changes heat energy into mechanical energy. The earliest instances used steam generated by boiling water to blow things, in the place of wind, and the simplest developments were mechanisms that could only pump water, not versatile methods to work different kinds of machinery. The early steam engines that could do this changed the face of industry, which could now be located away from flowing water as a source of motive power, and brought in the industrial revolution. While the steam engine uses heat from outside to heat the steam, the petrol or diesel engines are "internal combustion" ones — it is the fuel itself that pushes the pistons and makes the motor go.

But steam engines can use any kind of fuel and are also able to work at high altitudes where other engines have issues.

The principle of the heat engine is nicely described in the Sterling engine, which was developed as an air engine in 1816, as an improvement over the steam one. The Sterling engine has two cylinders – one where the gas is heated and pushes the piston to turn a flywheel, and the other which is cooled so that the piston moves back while feeding the working substance gas back into the other cylinder to be heated. The complementary motion of the two pistons works the flywheel, which can be connected to other machinery — a mill, a power loom or a locomotive wheel.

The principle is that when the first cylinder is heated the gas molecules start moving faster and push hard against the piston, which moves the flywheel. This also causes the gas to expand and then cool. In fact, it is in this cooling that the heat energy that was supplied to the gas is transferred as mechanical energy to the flywheel. The heat energy was random motion of molecules, in all directions. The rigid formation of the cylinder and the unidirectional motion of the piston convert the molecular motion of millions of molecules into the motion of the flywheel.

The system works smoothly because the number of molecules that strike the surface of the piston in a second is so exceedingly large that the piston feels a continuous thrust, not individual bumps. Reduction in the size of the engine would reduce the size of the piston, but not the size of molecules or the number that strike a given area of the piston. When the size of the piston goes down to molecular dimensions, then the numbers striking are no longer so great and the piston would actually receive sporadic impacts. In fact, at some moments it may be an atmospheric molecule that pushes the piston backwards, instead of the other way about! The result is that the smooth back and forth motion, in step with the heating-cooling cycle, is disturbed and the engine cannot work. Quite apart from the difficulty of manufacturing components at the size of microns, this nature of the heat engine has been the limitation in reduction of the engine size.



A Stirling engine in the microworld: In a normal-sized engine, a gas expands and contracts at different temperatures and thus moves a piston in a cylinder. Diagram courtesy Fritz Höffeler/Art For Science.

Stuttgart experiment

But despite this difficulty — that different laws of physics become important at small dimensions — the Stuttgart team found that the principle of the heat engine stayed unchanged. "We successfully decreased the size of the essential parts of a heat engine, such as the working gas and piston, to only a few micrometres and then assembled them to a machine," says Valentin Blickle, a member of the two-man team. In the normal Stirling engine, the piston moves back and forth and the molecules of the gas are the working substance.

The Stuttgart engine replaces the piston with a laser beam, which restrains or liberates a plastic bead, just like the piston compresses or moves to allow the gas to expand. Just as the motion of the molecules of the gas are set in motion with heat, the plastic bead gets its motion from the molecules of water, in which it floats. Thus, the water is heated and allowed to cool by an alternating laser beam, while the bead, buffeted by water molecules, moves in step with the laser that restrains or frees its motion, doing work, or transferring energy from the water to the laser field in the process.

The arrangement, with a micrometre size bead as working substance, which can be observed in a microscope, and is itself moved by molecules of water, is halfway to a heat engine that directly uses molecular motion.

Despite the intermediary of the bead, the machine works in fits and starts, sometimes coming to a stop when the movement of the bead goes out of step. But on the average, the machine is found to work at the same efficiency in converting heat energy into mechanical energy as a normal heat engine.

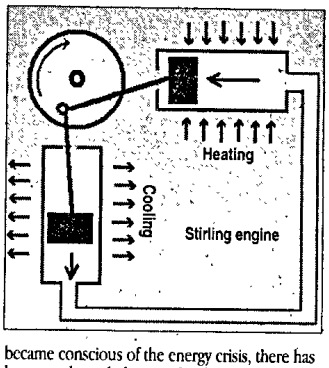
"This was not necessarily to be expected, because the machine is so small that its motion is hindered by microscopic processes which are of no consequence in the macroworld," says Clemens Bechinger, professor at the University of Stuttgart and the other member of the team.

Such working in fits and starts in normal life, as in the case of a "sputtering engine", would be unacceptable to the everyday motorist. But in the present case, what is being done is to show that the principle of the heat engine stays unchanged at small dimensions, despite limitations of implementation.

The normal heat engine, at any rate, is no achiever in efficiency. Even in principle, the efficiency is limited by the higher and lower temperatures involved. The higher temperature is limited by the materials available and the lower temperature cannot even come down to the ambient; it has to be not below that of condensing steam. Steam engines, or even diesel engines, are thus not more than 20-40 per cent in energy efficiency, much of the waste being in the form of "low grade heat" of the exhaust gas or condensed steam. Arrangements are thus attempted to make use of this "waste" heat so that overall efficiency improves. One method is to use the heat for domestic heating and there are ways to generate electricity from low-grade heat.

But the demand for such secondary output of the system usually cannot match the level of "waste" heat generated in large plants, where this energy has to be lost in cooling towers or in raising the temperature of adjoining water courses.

But the efficiency can be higher with a series of small heat engines and since the world

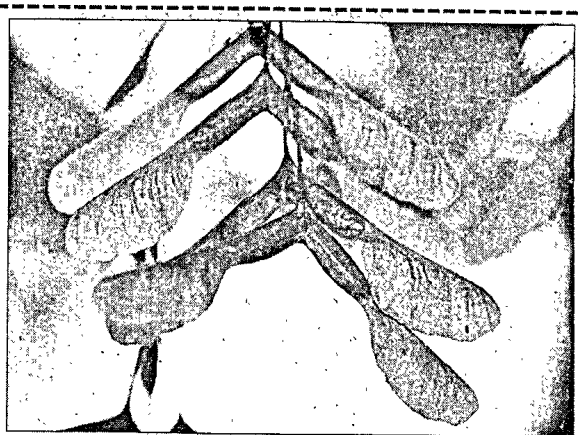


became conscious of the energy crisis, there has been much work done to develop more fuel-efficient alternatives. In this context, a working, micrometer-sized engine may present very high levels of efficiency, once implemented. The Stuttgart experiment shows that the simple heat engine is workable at microscopic dimensions, which would enable all kinds of applications.

The writer can be contacted at simplescience@gmail.com

UPS in the human body?

MECHANICAL devices, like everyday machines, are rarely found in the natural world. The principle of the lever, of course, is there in the movement of limbs for grasping and all animal movement, but direct conversion of energy in the mechanical sense is not found. An only instance may be of the "helicopter seeds" of the ash tree (*Fraxinus excelsior*), which are disseminated by the wind. The seed has a screw-like wing which the slightest breeze sets spinning, giving the seed a "lift" that carries it long distances. The devices placed within the body by surgical methods are limited to "pacemakers" that deliver electrical signals or some that release a controlled dose of drugs. The creation of miniature motors or engines that can use body heat to do mechanical work could function as pumps and actually drive metabolic processes where natural mechanisms have failed.



The "helicoper seeds" of the ash tree have screw-like wings which the slightest breeze sets spinning, giving them a "lift" that carries them long distances.

Mint ND. 14.12.11, P-4

CONTINUING SEARCH

Scientists fail to pin down 'god particle'

BY ROBERT EVANS
feedback@livemint.com

GENEVA

International scientists on Tuesday said they had found signs of the Higgs boson, an elementary particle believed to have played a vital role in the creation of the universe after the Big Bang.

Scientists at the CERN physics research centre near Geneva, however, said they had found no conclusive proof of the existence of the particle, which, according to prevailing theories of physics, gives everything in the universe its mass.

"If the Higgs observation is confirmed...this really will be one of the discoveries of the century," said Themis Bowcock, a professor of particle physics at Britain's Liverpool University. "Physicists will have uncovered a keystone in the make-up of the universe...whose influence we see and feel every day of our lives."

The leaders of two experiments, ALTAS and CMS, revealed their findings to a packed seminar at CERN, where they have tried to find traces of the elusive boson by smashing particles together in the Large Hadron Collider at high speed.

Scientists at CERN say they had found signs of the Higgs boson, but no conclusive proof of its existence

"Both experiments have the signals pointing in essentially the same direction," said Oliver Buchmueller, a senior physicist on CMS. "It seems that both Atlas and us have found the signals are at the same mass level. That is obviously very important."

Fabiola Gianotti, the scientist in charge of the ATLAS experiment, said ALTAS had narrowed the search to a signal centred at around 126 GeV (giga electron volts), which would be compatible with the expected strength of a Standard Model Higgs.

"I think it would be extremely kind of the Higgs boson to be here," she told a seminar to discuss the findings. "But it is too early" for final conclusions, she said. "More studies and more data are needed. The next few months will be very exciting... I don't know what the conclusions will be."

Under what is known as the Standard Model of Physics, the boson, named after British physicist Peter Higgs, is posited to have been the agent that gave mass and energy to matter after the Big Bang creation of the universe 13.7 billion years ago.

While its discovery will cement current knowledge about particles such as electrons and photons, results of work at CERN could also prove it does not exist. Such an outcome would undermine the foundations of accepted theories of the make-up of the universe.

"If the first inklings of the Higgs boson are confirmed, then this is just the start of the adventure to unlock the secrets of the fundamental constituents of the Universe," said Stephen Haywood, head of the Atlas Group at the STFC Rutherford Appleton Laboratory. **REUTERS**

Asian Age ND 14/12/2011 P-1

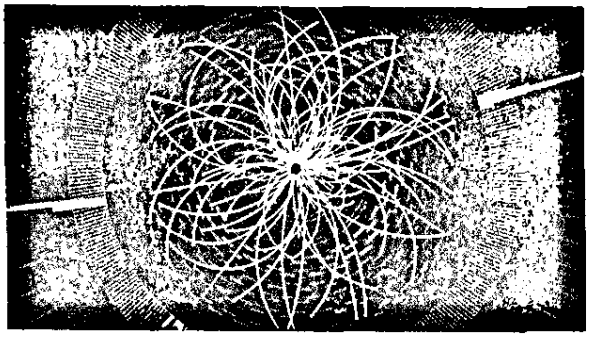
If confirmed, it will be the key to explaining mysteries of the universe

Scientists close in on the 'God Particle'

Geneva, Dec. 13: Physicists said Tuesday they had narrowed the search for the elusive sub-atomic Higgs boson particle that would confirm the way science describes the universe.

Experiments at Europe's giant atom smasher have "reduced the window where scientists think they will find the Higgs boson," also known as the "God Particle", said Bruno Mansoulie, a researcher at the European Organisation for Nuclear Research (CERN).

The Higgs boson is the missing link in the so-called Standard Model of physics, which explains how the basic building blocks of all matter fit together. Its existence — if confirmed — would explain in a single stroke the mystery of what gives this invisible constellation of particles mass.



A graphic represents traces of proton-proton collision as measured in the Compact Muon Solenoid experiment. — *AFP*

Such a discovery would rank in importance with major breakthroughs of the last century, going back to Einstein's first formulation of quantum physics.

For now, however, the Higgs boson exists only in theory. If it turns out to be a mirage, it would force scientists back to the drawing board to rewrite the textbook of particle physics.

CERN reported Tuesday the midpoint results from two separate experiments that independently arrived at the same conclusion, pointing to activity within a certain range of mass that would be consistent with the Higgs boson.

The webcast presentation was made before several hundred scientists in a atmosphere charged with excitement, punctuated with applause.

Taken together, the results provide "tantalising hints" that the sought-after particle is hiding inside a narrow range of mass, CERN said in a statement. "It's too early to draw definitive conclusions, we need more data," said Fabiola Gianotti, head of the ATLAS experiment.

"But we have established a solid foundation for passionately exciting months ahead," she said, adding that a definitive answer was expected with 12 months.

British physicist Peter Higgs conceived the idea of the boson — a particle that carries force — in the mid-1960s to explain why much of matter produced by the Big Bang has mass, and can therefore coalesce. Now 82, he is seen as a Nobel Prize contender.

— *AFP, Reuters*

Times of India ND 14/12/2011 P-22

'Tantalizing hints' of God particle recorded

No Direct Proof Yet, But Data From New Tests Narrows Down Search For Basic Building Block Of The Universe

Dennis Overbye

Physicists will have to keep holding their breath a little while longer. Two teams of scientists sifting debris from high-energy proton collisions in the Large Hadron Collider (LHC) at CERN, the European Center for Nuclear Research, said on Tuesday that they had recorded "tantalizing hints" — but only hints — of a long-sought subatomic particle known as the Higgs boson, whose existence is a key to explaining why there is mass in the universe.

It is likely to be another year, however, before they have enough data to say whether the elusive particle really exists, the scientists said. The putative particle weighs in at about 125 billion electron volts, about 125 times heavier than a proton and 500,000 times heavier than an electron, according to one team of 3,000 physicists, known as Atlas, for the name of their particle detector.

The other equally large team, known as CMS — for their detector, the Compact Muon Solenoid — found bumps in their data corresponding to a mass of about 126 billion electron volts.

If the particle does exist at all, it must lie within the range of 115 to 127 billion electron volts, according to the combined measurements. "We cannot conclude anything at this stage," said Fabiola Gianotti, the Atlas spokeswoman, adding, "Given the outstanding performance of the LHC this year, we will not need to wait long for enough data and can look forward to resolving this puzzle in 2012."

Over the last 20 years, suspicious bumps that might have been the Higgs have come and gone, and scientists cautioned that the same thing could happen again, but the fact that two rival teams using two different mammoth particle detectors had recorded similar results was considered to be good news.

Physicists expect to have enough data to make the final call by the summer.

The Atlas result has a chance of less than one part in 5,000 of being due to a lucky background noise, which is impressive but far short of the standard for a "discovery," which requires one in 3.5 million odds of being a random fluctuation. Showing off one striking bump in the data, Gianotti said, "If we are just being lucky, it will take a lot of data to kill it."

Physicists around the world, fuelled by coffee, dreams and internet rumors of a breakthrough, gathered in lounges and auditoriums to watch a webcast of a series of talks and a discussion of the results at CERN on Tuesday. The results were posted on the web. NYT NEWS SERVICE

GREATEST HUNT

Image showing traces of collision of particles at Cern

What is Higgs boson

The Higgs boson was posited in 1964 by British physicist Peter Higgs as the agent that gave mass to matter in the wake of the Big Bang 13.7 billion years ago, making possible the formation of stars and planets, and eventually the appearance of life

Failed attempts

Efforts since the mid-1980s to find the particle in the US Tevatron collider and the LHC's predecessor at Cern, the LEP, and prove Higgs correct by smashing particles together and creating mini Big Bangs, have until now failed

Missing link

The boson has been called the 'capstone' of Albert Einstein's universe of elementary particles and three fundamental forces that control the cosmos under the 'Standard Model' finalised by physicists in the 1970s. The Higgs particle was the missing linking brick in this architecture

What scientists think

Some top scientists like Stephen Hawking have long voiced doubt about boson's existence and have wanted it to be replaced in the Standard Model by something else

> "I think it would be extremely kind of the Higgs boson to be here... More studies and data are needed. The next few months will be very exciting
>
> **Fabiola Gianotti** | SCIENTIST IN CHARGE OF ATLAS EXPERIMENT
>
> Window for the Higgs mass gets smaller and smaller... But be careful — it's intriguing hints... We have not found it yet, we have not excluded it yet
>
> **Rolf Heuer** | DIRECTOR OF THE EUROPEAN PARTICLE PHYSICS LAB

Hindustan Times ND 14/12/2011 P-3 (ht education)

hte

HIND

PROFILE: ambedkar university, delhi

Ushering in change

The only varsity in the Capital to cater exclusively to the study of social sciences has a lot more to offer its students

Gauri Kohli
■ gaurl.kohli@hindustantimes.com

Two years ago, when Aishna Kejriwal had to pick a college for her undergraduate studies, she was in a dilemma. Although Ambedkar University, Delhi (AUD) was not her first choice, Kejriwal still preferred it over Delhi University. "I was late in applying for DU admissions. AUD was very new at that time but after visiting the campus I was convinced that studying there was an equally good option. Now, after two years, I think I took a wise decision," says Kejriwal, who is pursuing a BA (hons) with a major in economics.

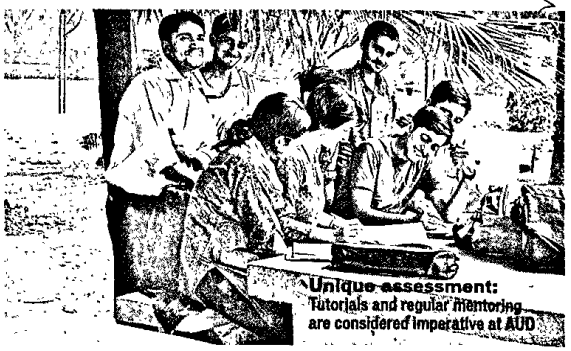
The curriculum and teaching methodology at the varsity have impressed her immensely. "AUD provides a welcoming environment where everyone is exposed to so many courses in the initial months that they get to choose a subject of their (real) choice. This not only widens the domain of our learning, but also provides us chances of exploring our interests further. The focus is on non-rote learning and the course content is very refined," she says.

Programmes: Though only three years old as a university, there are many accomplishments that its students and faculty are proud of. Eight MA programmes, seven (BA hons) programmes, apart from the MPhil and PhD programmes, are on offer through several schools.

The university has also been able to make a mark by institutionalising innovative practices in curriculum design, an interdisciplinary approach, and a versatile assessment system, among other things.

USP: AUD is the only university in the Capital to cater exclusively to the study of humanities and social sciences. The university has various schools, which include those for Undergraduate Studies; Human Ecology; Human Studies; Culture and Creative Expressions; Design; Business, Public Policy and Social Entrepreneurship; Educational Studies; Law, Governance and Citizenship; and Liberal Studies. The unique aspect of undergraduate programmes at AUD is that there are multiple exit possibilities, enabling students to graduate after three years with a single major, or after four years with a double major.

Assessment depends both on continuous and end-of-course performance, with a focus on avoiding unnecessary stress on students. Tutorials and regular mentoring are considered imperative. The end-of-semester assessment in any course carries no more than 40% of the course grade weight.



Unique assessment: Tutorials and regular mentoring are considered imperative at AUD

"This assessment component is in the form of written exams, term papers, term-end submission projects, viva-voce or a combination of these. The progress of undergraduate students is tracked through a mentoring system involving senior postgraduate students and faculty acting as tutors and mentors," says Salil Misra, dean, School of Liberal Studies.

IT quotient: The Kashmere Gate campus boasts of various labs with the latest computers and high-speed Internet. The university's website has details about the various courses, admissions, faculty, seminars, conferences and a section titled 'students zone'.

Clubs and fests: The varsity has several inter-college activities for students round the year where they interact with counterparts from DU and JNU. AUD also has an annual fest called AUDacity in which several DU colleges take part.

Studentspeak: "I might have only been here for five months, but Ambedkar University, Delhi has allowed me to understand my interests. The set of foundational courses as well as obtaining a certain number of credits outside your majors gives you the opportunity to realise your actual potential," says Akhil Veetil, a first-semester student.

Statesman ND 14/12/2011 P-11

Journey into uncharted voids

Voyager 1 is about to become the first man-made object to leave the Solar System, says steve connor

AFTER a voyage lasting more than 34 years, a spacecraft that has travelled further than any man-made object is on the verge of leaving the Solar System and entering the mysterious region of interstellar space where nothing terrestrial has gone before.

Scientists at the National Aeronautics and Space Administration said the Voyager 1 space probe, which has travelled about 11 billion miles since its launch in 1977, has entered the cosmic equivalent of the doldrums, where high-speed solar winds die down at the very edge of the Solar System.

Voyager 1, launched within weeks of its twin probe, oyager 2, was originally designed to explore Jupiter and Saturn. After making a string of important observations, such as active volcanoes on Jupiter' moon Io and the intricacies of Saturn's rings, the mission was extended. Voyager 2 went on to explore the faraway planets of Uranus and Neptune.

However, long after the official planetary missions ended, both spacecraft continued to plough through the farthest regions of the Solar System, while maintaining radio contact with mission control through its Deep Space Network.

Nasa expects that within the next few months — or, possibly, years if margins of error are taken into account — Voyager 1 will finally leave the Solar System for good and begin its journey through the vast void of interstellar space that comprises most of the Milky Way galaxy. Voyager 2 — travelling not far behind — will follow suit. Nasa scientists said that over the past year Voyager 1 had entered a kind of "cosmic purgatory" where the wind of electrically charged particles streaming from the sun had calmed.

Both spacecraft are now in a region known as the "heliosheath", the outermost layer of the Solar System where the solar wind, which can travel 16 miles per second, is being slowed down by the rising pressure of interstellar gas. Nasa scientists believe this indicates the imminent entry of Voyager 1 into the interstellar region, which is dominated by another kind of magnetic wind coming from a different direction of deep space.

"Voyager tells us now that we're in a stagnation region in the outermost layer of the 'bubble' around our Solar System. Voyager is showing that what is outside is pushing back. We shouldn't have long to wait to find out what the space between the stars is really like," said Ed Stone, Voyager project scientist at the California Institute of Technology in Pasadena.

Nasa changed the orientation of Voyager 1 four times this year to see whether the solar wind and magnetic field lines had switched direction. Data released at the American Geophysical Union meeting in San Francisco shows the magnetic field lines have not changed, indicating that Voyager 1 is still just within the "heliosphere", the magnetic bubble of charged particles created by the sun.

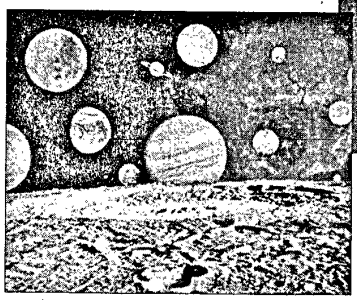
"We have seen the same east-west direction of the magnetic field since we launched. That's the solar magnetic field. Once we leave the heliosphere we will enter the magnetic field of the galaxy and all the data to date suggests that this field is orientated more north-south," Dr Stone told the meeting.

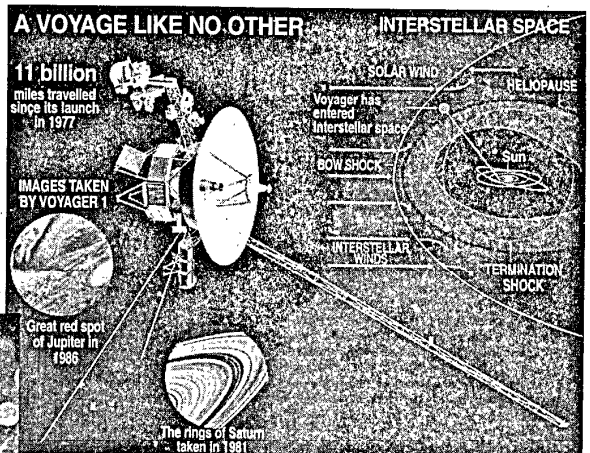
Final frontier: between the stars

■ English philosopher Francis Bacon appears to have been the first person to attempt to describe the space between stars when he wrote in 1626 about the "interstellar skie".

■ In the 19th century, scientists postulated an invisible luminiferous ether between the stars that allowed the transport of light. It is now known that electromagnetic waves, whether cosmic rays or light in visible wavelengths, can travel through interstellar space without the need for a physical "ether".

■ Astronomers today talk about an interstellar medium that fills the void between stars. Rather than a complete vacuum, it consists of about 99 per cent dust and one per cent charged particles or ions, but in incredibly low densities. Cosmic rays from deep space fill the void.





The Independent, London

Publication: The Times Of India Delhi;Date: Dec 14, 2011;Section: Times City;Page: 2;

Hazare phenomenon enters classroom discussion

Anahita Mukherji & Neha Pushkarna | TNN

New Delhi: Anna Hazare's crusade against corruption has united the Right, Left and Centre in more ways than one. The Anna phenomenon has entered classroom discourse at educational institutions of all hues.

At Jawaharlal Nehru University, known for its socialist leanings, students want to pursue a PhD on Team Anna whereas B-schools like the Faculty of Management Studies (FMS), Delhi University, are studying the success of Brand Anna. Colleges in Kolkata, Mumbai and Mysore have also critiqued the movement.

"Students pursuing an MA in sociology have made presentations on the Anna phenomenon, followed by classroom debates and discussions. Some students want to do a PhD on India's anti-corruption movement for which they have submitted their synopsis," said Anand Kumar, sociology professor at JNU. During classroom discussions on Hazare, students were allowed to express varied views on the phenomenon, he added.

Elsewhere in the city, students of marketing at FMS sat through two elaborate lectures by in-house faculty on how Anna had become a huge brand with consumers (the common man) vouching for his credibility as well as the ethics of the campaign. "We discussed how his competitors lost ground and what they could have done to counter Hazare," said FMS student Amol Endait.

"The issue of corruption was always at the back of people's minds. We call it latent need. His competitors should have aligned themselves with the issue instead of opposing Hazare. By doing so, they would have scored brownie points with consumers," added Endait.

At Mumbai University, postgraduate sociology classes have looked at the crusade against corruption while examining democracy and civil society in contemporary India and the manner in which Team Anna mobilized the middle class. "It is too early to classify the movement. It is still being debated whether the phenomenon can be called a social movement," said Kamala Ganesh, sociology professor.

There is much debate on whether the Lokpal bill will be able to fight corruption. "I have initiated a classroom discussion on whether a strong Lokpal will solve India's problems. In a country plagued by widespread corruption, the Lokpal may itself turn corrupt," said Anindo Banerjee, political science professor at St Paul's College, Kolkata.

At St Xavier's College, Mumbai, the student council is organizing a public debate on corruption. The Anna phenomenon has also been critiqued in the classroom. "While the movement has drawn attention to corruption, it is largely a middle-class movement and does not tackle the great injustice being done to the poor. Those organizing the movement are media-savvy and have mobilized people using the internet," says Fr Frazer Mascarenhas, principal of St Xavier's.

At Delhi University, too, teachers have analyzed the role of the media in the movement. "We have looked at the role of the new media, such as Twitter, in the campaign," says Nandini Sundar, head of the sociology department at DU.

At Mysore University, it was impossible for the issue not to enter classroom discourse, as the students themselves were involved in the protests earlier this year. "My students did not attend college for a week as they were out on the streets supporting Hazare," says H M Vasanthamma, professor of sociology at the University of Mysore.

At IIT Delhi, students supported the campaign with protests and candlelight vigils on campus. "Student clubs organized lectures addressed by the likes of Arvind Kejriwal, an important part of Team Anna," says Anand Poonia, a third-year student at IIT Delhi.

ANNA IN ACADEMIA

JNU | Students want to do a PhD on the Anna phenomenon. MA students have made classroom presentations on the movement

DU | Studying role of media, especially new media like Twitter, in mobilizing the anti-corruption crusade. FMS held series of lectures on success of Brand Anna and his ability to strike a chord with citizens

IIT Delhi | Students held protests and candle-light vigils on the campus. Student clubs organized lectures

Mumbai University | Classroom discourse on Anna revolves round middle-class mobilization and democracy in contemporary India. University is debating whether the Anna phenomenon qualifies as a movement

St Xavier's College (Mumbai) | Anna phenomenon is being critiqued as essentially a middle-class movement

St Paul's College (Kolkata) | Debating whether strong Lokpal will actually solve India's problems, or whether the Lokpal itself will get corrupt

Mysore University | Came to a virtual standstill when Anna went on a fast in Aug. Issue discussed in classrooms

HindustanTimes
Title : It's time to work on Facebook
Author : Panna Munyal panna.saroopa@hindustantimes.com
Location :
Article Date : 12/14/2011

It's time to work on Facebook

We're going to be software engineers at Facebook's headquarters in Silicon Valley

Ankur Dahiya and Radhika Mittal

Ankur Dahiya and Radhika Mittal, who were among five IIT students hired by social networking website Facebook earlier this month, talk about their experience and expectations

Panna Munyal
panna.saroopa@hindustantimes.com

Ankur Dahiya, who hails from Rohtak in Haryana, and Radhika Mittal, who grew up in Kolkata, may come from different backgrounds – his is a family of doctors, hers is involved in various streams of commerce – but they also have a lot in common. They are both class toppers, BTech students at IIT (Delhi and Kharagpur, respectively), and both will be working with Facebook. The 21-year-olds cannot wait to finish their last semester because the first step in their post-IIT careers is a job that will take them to the world's computer engineering hub, Silicon Valley.

What is your job profile at FB?

Ankur: We're going to be software engineers at Facebook's headquarters in Silicon Valley. They have not outlined a profile, but it will be related to infrastructure maintenance and designing new services.

Radhika: I hope we get to work directly on ideas to improve the site, which is still at a growing stage. It'll be unfortunate if we end up doing only small modifications, while seniors get to do all the exciting stuff. I'd like to have the freedom to contribute directly to the new features.

What about the money?

Ankur: I don't know where reports of ₹65 lakh came from because the final offer has not yet come through, and even when it does, I will not be allowed to disclose the sum.

Radhika: I think the figures of ₹65 lakh and ₹77 lakh are based on an approximation of the offers made by international companies last year. Even I am yet to get the formal offer letter, but I believe the minimum pay bracket is between $100,000 to $125,000 (approximately ₹53 lakh to ₹65 lakh, respectively) a year.

What was the interview procedure like?

Both: Long!

Radhika: A month ago, FB gave us an online test in which we had to write a programme that would compute results efficiently and quickly. The shortlisted candidates then had to write two exams and undergo three rounds of interviews on the day of the placements.

Ankur: I was given just one written test on Day 1 of placements at IIT-Delhi and then after each round of interviews, people were eliminated till it was just me. I was asked questions about algorithms and programming. They were mainly concerned with my problem-solving abilities.

Did your course help you during the selection procedure?

Ankur: The course is mainly theoretical, and the questions FB asked have not been taught because they were application-based. So we had to come up with the solution and design them ourselves based on the theory we learnt at college.

Radhika: I think the tests, interviews and even the job are all directly related to my course. What I've studied in the past three-and-a-half years and the projects that I've done will help me solve problems and come up with code and programming solutions.

Did other companies make you offers?

Ankur: I was shortlisted by seven companies, but I could only interview with four because there was an overlap. I got offers from Google India, an investment firm in Gurgaon called Power Research and Facebook USA.

Radhika: I was shortlisted by Microsoft and IBM India Research Lab and got an offer from IBM in Delhi.

So why Facebook?

Both: It's in Silicon Valley!

Ankur: To be able to work there is any computer science graduate's dream come true. I feel my profile matches FB because it's an internet startup and has only 2,000 to 3,000 employees as opposed to say, Google's 30,000