

Newspaper Clips

February 21, 2012

The Pioneer ND 21/02/2012 P-5

Sibal seeks States' support for key education reforms

PIONEER NEWS SERVICE ■
NEW DELHI

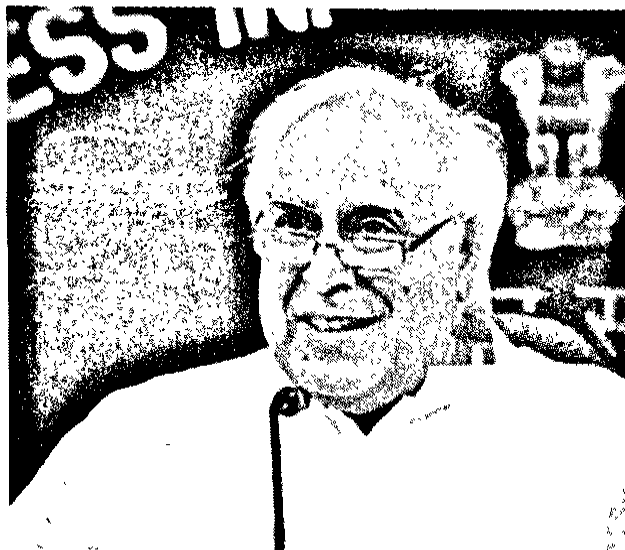
The proposed State Education Ministers' meet called by HRD Minister Kapil Sibal on Wednesday is crucial in evolving consensus on various education reform plans before the commencement of the 12th Five-Year Plan within the next few months.

According to sources in the HRD Ministry, the meeting is aimed at confidence building with the State Ministers, especially at a time when more than a dozen bills introduced by Sibal are held up in the Parliament by the Opposition. The meet is therefore a key opportunity for Sibal to take the State Ministers into confidence.

The issue of Common Entrance Test for admission to engineering colleges is expected to dominate the meeting. Considerable hype has been created on the possible merger of the Indian Institute of Technology's Joint Entrance Examinations (IIT-JEE) and the All India Engineering Entrance Examination (AIEEE) conducted by the CBSE for admissions into science and engineering colleges.

Since majority of engineering and science colleges fall under the purview of the State, if the proposal of common entrance test is to be implemented, the State Governments have to give their complete support.

The HRD Ministry has also claimed to introduce about 100 community colleges



in 2012-13. Accordingly, 80 colleges from the UGC list and 20 polytechnics under the State would be identified by the University Grants Commission and the All India Council for Technical Education in consultation with the respective State Governments for implementing the Community College Programme.

For the proper implementation of the Right to Education (RTE), the State Governments have to be galvanised further, sources pointed out. "The Act certainly can not become a success at the grassroot level without the active support of the State Government. Only nineteen States so far have monitoring mechanism for RTE. Major States like Uttar Pradesh, Tamil Nadu, Uttarakhand and north-eastern States are yet to set up protection authority for RTE.

Akash tablet upgrade not to cost more

In another development, HRD Minister Kapil Sibal on Monday stated that the next upgraded version of Akash will be fully indigenous and its improved version will be launched by the Government at the same price.

He assured that the price of what is the cheapest tablet available will be about ₹2,450 (\$49). It will be supplied primarily to students and its cost will not be hiked. He added that the new version will be launched later this year.

Mint ND 21.02.12 p-1

CHEAPEST TABLET

Sibal ejects DataWind, to go solo

Govt plans to retain the original price while assembling the tablet on its own; new version to be totally indigenous

By SURABHI AGARWAL & PRASHANT K. NANDA

NEW DELHI

The government's ambitious project of making available the world's cheapest tablet to Indian students suffered a setback after Union minister for human resource development (HRD) Kapil Sibal said that it's severing ties with Canada-based DataWind Ltd, which was first mandated to provide 100,000 units of the device.

Instead, the government is proposing to assemble the tablet on its own and eventually indigenize the product, while retaining the initial price.

The product got global attention after it was priced at \$45 (₹2,276 at the time of the launch), but was criticized for poor functionality and shoddy performance in field trials. Even after the company rejected the additional specifications sought by the Indian Institute of Technology (IIT), Jodhpur, Rajasthan, which was in charge of procuring and testing the device, the government did not give up on the project. The additional specifications were similar to those for rugged HP (Hewlett-Packard Co.) computers used by the US military.

The government is now planning to launch an upgraded version of the tablet as a completely indigenous product under the supervision of a high-powered committee comprising members from the Centre for Development of Advanced Computing (C-DAC), department of information technology, the IITs at Kanpur, Mumbai, Chennai and Jodhpur, and some public sector units, according to two senior government officials, who did not want to be named.

Sibal told news agency *Press Trust of India* in an interview that "DataWind—the manufacturer of the product—will not be associated with it any more", and that the government has roped in others for further development of the tablet. "There have been some problems with DataWind I must confess," he was cited as saying. "Therefore,

I have got into the act. The IT ministry has got C-DAC and (state-run) IIT Ltd into the act, and I am going to ensure that this product is fully indigenous and truly an Indian product."

Even though DataWind's initial mandate was to provide 100,000 tablets, it has only provided 10,000 to IIT-Jodhpur. On the other hand, it claims to have sold many more in the open market. According to its official website, the upgraded Aakash, or the UbiSlate 7+, has bookings till end-March.

In an email response, the company said: "DataWind does not have any communication from the ministry of HRD about this."

According to one of the two government officials cited above, the "HRD ministry will float a fresh tender in the next few days and the newly set-up committee will see how the procurement process and specifications can suit the need of the time".

However, the official said there will be no rethink on the price specified on 5 October, when the product was unveiled. "The ₹2,276 price point will not be violated."

Another official, who is part of the panel, said that it has been formed to come up with modified specifications for Aakash "and nothing to carry from the previous baggage".

The official added that the panel has two agenda items. One is to meet the immediate need for the tablet, which will be taken care of by Bharat Electronics Ltd (BEL) and Electronics Corp. of India Ltd. "The other agenda is to look at how the tablet can be developed completely in India in the long run," he said.

Though the ministry has an ultimate target of procuring some 220 million Aakash tablets, the forthcoming tender would be for 5 million units.

On 7 February, Sibal had told reporters that he was working on making Aakash a completely indigenous product and had a round of discussions with stakeholders concerned, including state-owned BEL in Bangalore. The low-cost tablet currently meets just 19% of the specifications that were sought. The focus on indigenization is part of the strategy to give a fillip to electronics manufacturing.

"For some time now, the thinking has prevailed in the government that a low-cost

Sibal ejects DataWind, to go solo

► FROM PAGE 1

computer would result in higher adoption, whereas there are other aspects that are important beyond affordability like content and connectivity," said Kapil Dev Singh, founder and principal consultant of Coeus Age, a consulting firm. "I think the idea of creating the cheapest computer should not be thrown out, but the price point has to be realistic."

He added that "when such unrealistic projects fail, it makes it difficult for the next initiative to be successful as pessimism comes as baggage".

IIT-Jodhpur director Prem Kalra declined to comment on Monday, saying that he has been travelling for the last few days.

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TURN TO PAGE 2 ►

Datawind out of Aakash project

C-DAC, Indian Telephone Industries to work on improved version of the tablet

BS REPORTERS & AGENCIES

Bangalore/New Delhi, 20 February

Datawind, the Canadian company that was involved in the production of the world's cheapest tablet Aakash will no longer be associated with the project, Telecom and HRD minister Kapil Sibal said on Monday.

The government has roped in the Centre for Development of Advanced Computing (C-DAC) and state-owned telecom equipment manufacturer Indian Telephone Industries (ITI) to further the development of the tablet computer. The minister said improved

version of the tablet would be fully indigenous and would be launched soon at the same price.

"There have been some problems with Datawind, I must confess. Therefore, I have got into the act. IT ministry has got C-DAC and ITI into the act and I am going to ensure that this product is fully indigenous and truly an Indian product," he said.

A spokesperson of Datawind said the company "does not have any communication from the HRD ministry about this development." To a query by *Business Standard*, ITI CMD K L Dhingra said the

company was yet to get any official communication from the ministry. He, however, said ITI was quite capable of handling a project of this scale.

Originally developed by the Indian Institute of Technology-Rajasthan, Aakash tablet is available to students at ₹1,100 after the government subsidy. So far, the manufacturing company Datawind has delivered 10,000 tablets to the Government of India. The project, however, ran into rough weather with allegations that it was using outdated technology with inadequate specifications. Besides, questions were also raised about the handling

of tenders for the project by an educational institute like IIT-Rajasthan.

The Union HRD minister said the next version of the tablet Aakash-II would be launched sometime in the ongoing year. "Well, 2012... Aakash-II should be launched. There have been some hiccups in the way. Remember when you do a project of this nature and when your dream is as big as this, things are never that smooth."

Welcoming competition from market for development of the tablet, Sibal said the ultimate objective was to give a quality product to the children.

Price of upgraded Aakash will be same, says Sibal

New Delhi: Human resource development minister Kapil Sibal said that Aakash, the world's cheapest tablet, will be fully indigenous and its improved version is likely to be launched by the government at the same price.

Sibal said Datawind — the manufacturer — will not be associated with it anymore and the government has roped in C-DAC and ITI for

further development.

On whether the tablet will be available within the same price range as that of the earlier product, Sibal said, "Yes that's what we hope. It is to be upgraded."

Welcoming competition from market, the minister said the main goal is to give a quality product to the children. The tablet is priced at about \$49 (Rs 2,414). **TNN**

'Cheating': HC refuses to scrap AIIMS test

RAKESH RANJAN ■ NEW DELHI

While a probe is underway into the allegations of cheating in the common entrance test for post-graduate medical courses conducted by AIIMS, the Delhi High Court has refused to scrap the test on mere apprehensions of cheating. The court said this could not be a ground to quash the entire test when the incident is being probed by the crime branch of Delhi Police. The court's observation came while dismissing a bunch of pleas by some candidates to quash the All-India Post Graduate Medical Entrance Examination (AIPGMEE), held on January 8 at 156 centres across the country.

Justice Hima Kohli dismissed the pleas saying they were 'premature' and based on 'surmises' and 'conjectures'.

"Merely an apprehension expressed by the petitioners that they would suffer irreparable loss and injury in the event of a scam, which is under investigation by the Crime Branch of Delhi Police, cannot be considered sufficient ground for quashing the AIPGMEE-2012 held on January 8, 2012 for 69,069 candidates all over the country," she said.

"When the magnitude of the aforesaid incident is still unknown and the investigations are on, the present petition can only be termed as one based on surmises and conjectures. The petition is dismissed along with the pending application, as being premature and without any basis," Justice Kohli added. The petitions filed by five candidates had mentioned reports of copying from var-

ious centres, including that in Noida, saying that it was a part of a widespread scam. The petitioners had also sought direction to the AIIMS to evolve some mechanism to prevent the recurrence of cheating in the PG entrance examination. The AIIMS management had, however, opposed the plea, claiming that it was a stray incident which took place only at the Noida centre and in the remaining 155 centres, the examination were held peacefully and without any hindrance.

"As per affidavit filed by AIIMS, it is apparent that the incident of cheating is found to have occurred on January 8, 2012 only at one examination centre and that, too, in a centre which was situated at Noida, where a mobile phone is stated to have been recovered

from one candidate and some electronic gadgets were recovered from two candidates," the bench noted. The court also said the petitioners are not part of the centres under investigation; they all appeared for their exams at different centres in Delhi. This, the court observed, did not validate the claims of the petitioners.

"Apart from the aforesaid incident, the AIPGMEE-2012 appears to have been conducted peacefully at all other 155 examination centres. A total number of 71,968 candidates are stated to have applied for sitting in the aforesaid examination and 69,069 candidates had actually appeared in the said examination. It is also pertinent to note that the examination centre of none of the five petitioners herein was situated at Noida," the court observed.

Hindu ND 21.02.12 P-3

High Court refuses to scrap PG medical entrance exam

'Matter is being probed by the Delhi Police Crime Branch'

NEW DELHI: The Delhi High Court has refused to scrap the common entrance test for post-graduate medical courses in the wake of allegations of copying at some centres saying that mere apprehension of cheating cannot be a ground to quash the entire test when the incident is being probed.

Justice Hima Kohli dismissed the pleas, made by some candidates, to quash the All-India Post Graduate Medical Entrance Examination (AIPGMEE), held on January 8 at 156 centres

across the country, saying that they were "premature" and based on "surmises" and "conjectures".

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The petitions filed by five candidates had mentioned reports of copying from various centres including Noida saying that it was a part of a widespread scam. - PTI

Mint ND 21.02.12 P-5

BEYOND LIMITS

Transistor made using single atom may help beat Moore's Law

BY REG GALE
 feedback@livemint.com

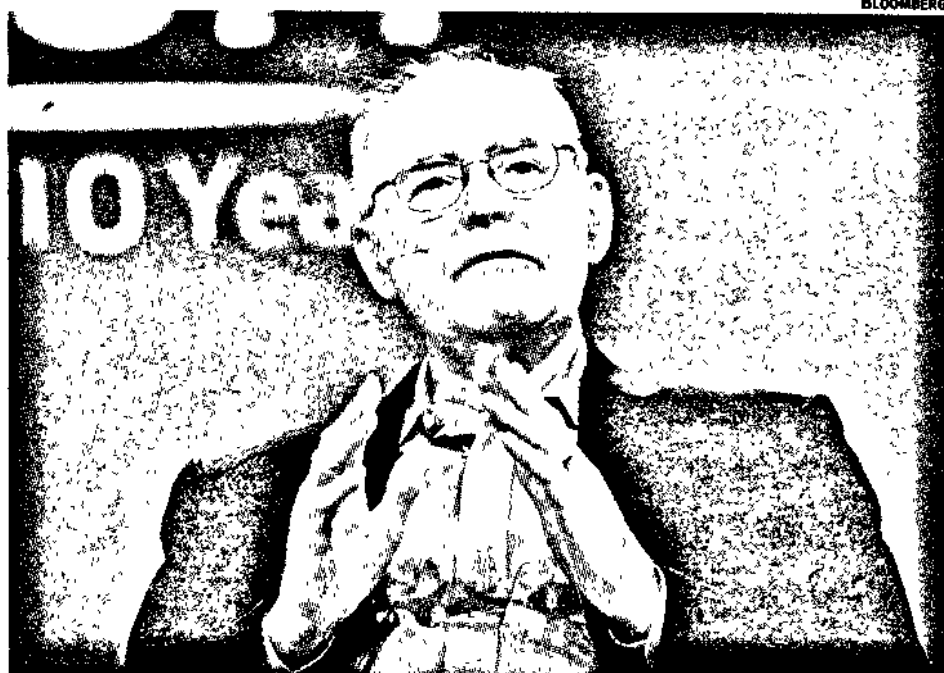
NEW YORK

Scientists have taken a first early step towards escaping the limits of a technological principle called Moore's Law by creating a working transistor using a single phosphorus atom.

The atom was etched into a silicon bed with gates to control electrical flow and metallic contacts to apply voltage, researchers reported in the journal *Nature Nanotechnology*. It is the first such device to be precisely positioned using a repeatable technology, they said, and may one day help ease the way towards creation of a so-called quantum computer that would be significantly smaller and faster than existing technology.

Moore's law states that the number of transistors that can be placed on an integrated circuit doubles every 18 months to two years, and it's predicted to reach its limit with existing technology in 2020. Cutting the size of a transistor to a single atom may defeat that concept.

"We really decided 10 years ago to start this programme to



Tech guru: A file photo of Gordon Moore, after whom the law is named.

try and make single-atom devices as fast as we could, and beat that law, said Michelle Simmons, director of ARC Center for Quantum Computation and Communication Technology at the University of New South Wales, Australia. "So here we are in 2012, and we've made a single-atom transistor roughly 8-10 years ahead of where the industry is going to be."

Moore's Law is named for Gordon Moore, the co-founder of Santa Clara, California-

based Intel Corp., the world's largest chip maker. He first described the phenomenon in a 1965 report that was later cited by others with his name attached to it.

There is a limitation to the latest finding: The atom must be kept at minus 391 degrees Fahrenheit to keep it from migrating out of its channel, the report said. Because of this, the result should be seen as a proof of principle rather than an initial step in a manufacturing process, the researchers

Shaping youth of tomorrow

RAJESH GILL

EDUCATION is the backbone of any society, since it performs the vital functions of informing, socialising and civilising the young minds who are gradually getting into the spaces, both private and public, where significant decisions are going to be made. In other words, it is this youth, the target group of education system in any society, which shall be giving a shape to the future social system, including the economic, political and cultural. But as a matter of fact, the educational system comprising schools, colleges, universities and other technical institutions happens to be just one segment of the broader system that *educates* the young minds. The other segments include family, neighbourhood, media, market, religion, polity and so on. It is generally assumed that the spaces where our youth are imparted *education* are only the classrooms, with teachers at the steering, leading the process.

A few decades ago, these spaces no doubt comprised the most important segment out of all others, the family and neighbourhood coming next, since the youth had little exposure to either market or media. Their interface with religion and polity was by and large mediated through the family. On the other hand, today's young brigade has a direct, uninterrupted and continuous interface with market, media and polity, while the family and the school have been pushed to the background. Both education and market/media have *youth* as the most important target group but with a subtle difference.

So far as our country is concerned, it is liable to universalise education which is a national goal and for that the numbers matter the most. Having worked on school enrolment figures, the global pressures through quality control measures have forced India to enhance its enrolment ratio in higher education. This endeavour is being pursued by increasing the number of higher educational institutions all over the country, resulting into higher enrolment.

Going back to the issue, while the stakeholders in educational institutions, teachers being most pertinent, have no personal interest in *educating* the students, beyond completing (or not) the syllabi in the privacy of classrooms, the stakeholders in market and media successfully and aggressively reach out to the target youth. The inputs as well as incentives in both the ventures therefore are quite varied, differently motivated, and ignited. The results are bound to be different too. Education in this sense thus is lackluster, frivolous, dispensable and uninteresting. What these institutions in fact are imparting is not *education* but mere information, without any context, value frame or relevance. Under these circumstances, the zeal with which the stakeholders in the corporate sector work, with commercial stakes lying high, has no match with their counterparts in the educational sector.

The consequence is a complete trivialisation of education not only in its content but even its essentiality. If education is just information, one can have it through online programmes or open schools/universities, as per one's own convenience. In fact, going to a particular school or college or university has primarily become a



Today's young brigade has a direct interface with market, media and polity

matter of status symbol. With a huge premium placed on the brands, that too the international ones, thanks to globalisation, one opts for a school or university, mainly for the tag that it carries. In such a system, one can very well understand the plight of a school or college situated in a remote rural area, attended by all those (including teachers as well) not having access to the better ones. How can one expect them to deliver quality education, when they too are restlessly waiting for an opportunity to move to the core, in an earnestness to join the bandwagon?

The most important question is, does *education* really imply dissemination of information only? What about the live experience of having a teacher in flesh and blood, who does not just pass on information but is ideally supposed to guide and direct the students not only towards their goals but even the means they should adopt. Has the teaching community completely surrendered before the market and media, choosing the most convenient option? This is the reason why a *teacher* has lost the glory he/she had been enjoyed through ages. In order to actually *educate* the highly exposed, intelligent and *difficult* students, teachers have to be ahead of them in knowledge (not just information), communication, interpersonal skills and self-confidence. In the name of democracy and individualism, it has been foolish for teachers, especially in higher educational institutions, to throw away the authority that naturally goes with their profession. Yes, a teacher is supposed to be the greatest friend of his/her students, most trustworthy of all, but does that mean only gossiping, smoking and drinking with them, with a non-interfering attitude at a time when they need an advice? Respecting others' privacy in no way implies a lack of empathy and concern, especially when the other (student in this case) desperately needs it. Even a robot can impart information, but only a human teacher

is competent enough to contextualise the knowledge and deliver it to the young minds in an absolutely objective manner. (Ab)using the classroom for poisoning the young minds with a particular political ideology is no less than a crime, for which not only the teachers but the whole society has to pay a huge price. Therefore, in the process of education, both means and ends are equally important. Not only *what* is being taught, but *how* it is taught makes all the difference.

It is imperative thus that education is not any kind of business; it is no business in fact. It is the most significant segment of a society, which makes or breaks the future of a society. With the commercialisation taking the front seat through both the media and market, it is all the more important that the education system is revitalised, with the most competent (in knowledge and wisdom) minds being entrusted with *educating* the young boys and girls just not towards making more and more money but developing critical abilities to shape a future society that is actually civilised. And for that, we certainly cannot afford to trivialise education!

The writer is Chairperson, Departments of Sociology and Women's Studies, Panjab University, Chandigarh

ADMISSION DEADLINE

From now, more information on Admission Deadline will be available online. Please visit *The Tribune* website at: www.tribuneindia.com and click on "Education" in the "Weekly Specials" section to get details.

— Pervin Malhotra,

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Economic Times ND 21/02/2012 P-13

More Techies Denied H-1B Visa in FY11

Visa Woes: Cos also faced massive delays as 'requests for evidence' spiked to 63% in the last financial year

Mix and Match

US headcount of top IT/BPO firms

Cognizant 20,000

Infosys 12,000

Wipro 10,000

Aegis 7,000

HCL 5,000

TCS 4,700

Includes local hires as well as Indian engineers on deputation



"It is a concern. We have given the same data that we used to but authorities have become stricter so the rejection rates have gone up. We are making up by increasing our hiring locally"

V Balakrishnan CFO, Infosys

SHRUTISABHARWAL
BANGALORE

Increasing numbers of skilled Indian professionals are being denied non-immigrant visas by the United States, making it difficult for information technology firms to send employees to client locations in that country, limiting their ability to win more business and potentially forcing them to hire more locals.

Rejection rates for H-1B visas were as high as 17% in the last financial year while 27% of L-1B visas petitions were declined, according to US-based National Foundation for American Policy (NFAP), which relied on data released by the US Citizenship and Immigration Services.

Five years ago, in the 2006-07 financial year, these numbers stood at 11% and 7%, respectively. Further, firms seeking visas also faced massive delays as clarifications, or 'requests for evidence,' spiked to 63% from 24% five years ago.

In 2010, application fees for H-1B visas were doubled to fund America's security measures along its southern neighbour Mexico.

"The dramatic increase in denial rates and requests for evidence for employment petitions without any change

in the law or regulations raises questions about the training, supervision and procedures of the career bureaucracy that adjudicates petitions and the US government's commitment to maintaining a stable business climate for companies competing in the global economy," NFAP said in its February report. Indian IT firms have complained of higher visa rejections over the past two-three years, resulting in loss of business and revenue.

"It is a concern. We have given the same data that we used to but authorities have become stricter so the rejection rates have gone up. We are making up by increasing our hiring locally," the chief financial officer of Infosys, V Balakrishnan said.

Industry body Nasscom's president Som Mittal said new filters have been introduced in the process by visa offices but companies have not been informed of the same. The US consulate general in Chennai did not reply to email queries for this story.

An L-1B visa is meant for workers with specialised knowledge of the company's area of work but tech firms are

largely dependant on H-1B visas meant for 'speciality occupations' including engineering, mathematics and social sciences among others.

Indian IT firms and multinationals such as IBM and Microsoft who have large operations in India are the biggest users of H-1B visas.

The US market accounts for over 50% of the total software exports from India and companies send thousands of employees every year to visit clients, make sales pitches and work on projects. Last year for instance, Cognizant bagged the largest number of H-1B visas followed by Infosys and Wipro. The company got almost 6,000 H-1B visas of the 60,000 that are approved every year, while Infosys got 4,000.

In response, Indian IT firms have been vocal about meaning to hire more aggressively in the US. They want to appear as job creators in the US, a market which is perceived to be turning increasingly protectionist, especially at a time when unemployment remain high in the aftermath of the 2008 financial crisis.

While Infosys plans to increase its US headcount by a thousand every year, cross-town rival Wipro has said at least 50% of its staff in a foreign locations would comprise locals.

In 2006-07, H-1B and L-1B visa rejections stood at 11% and 7%, respectively

Asian Age ND 21/02/2012 P-4

More science students head for Germany

RASHME SEHGAL
NEW DELHI, FEB. 20

With increasing numbers of programmes of higher learning being taught in English, Germany has emerged as one of the most favoured destinations for Indian students.

German institutes of higher learning are now offering more than 1,000 international degree programmes in the English and this has appealed to the Indian students who are making a beeline to study in Germany.

The number of Indian doctoral students studying in Germany has increased 20-fold in the last decade and in 2009, more than 1,000 students were pursuing their doctoral studies in German institutions.

The number of Indian guest scientists at the Max Planck Institute has doubled in the last five years with more than 600 Indian guest researchers and scientists and post doctorates at the Max Planck Institutes. In fact with 178 scientists, India represents the largest number of for-

eign participants at the International Max Planck Research Schools.

A recent British Council survey confirms that Germany has beaten Australia, UK and China as being the most favoured destination in the higher education arena.

In order to make Germany a more friendly destination, the German Parliament is expected to adopt a bill to implement a EU "Blue Card" permit whereby foreign graduates in German universities are provided unrestricted

access to the job market and their spouses will be eligible for work permits during the period of their stay.

To further this exchange, the Indo-German research dialogues in the life sciences, Prof. Axel A. Brakhage highlighted that scientists need to learn and collaborate from each other.

This point of view was confirmed by Dr Seyed E. Hasnain, professor of Biological Sciences at IIT Delhi has specialised in the epidemiology of TB

and is the first recipient of the Robert Koch Fellowship.

Prof. Rajendra Prasad with the School of Life Sciences, JNU, is a Humboldt fellow who has specialised in fungal infections, which constitute an ever-growing medical problem. "We have been collaborating for more than two decades with scientists from the universities of Bonn, Wurzburg and Dusseldorf to look into the entire spectrum of fungi infection in human beings," he said.

Unshackling Our Thinkers

Government's attitude towards research funding must change for our researchers to compete globally

Pankaj Jalote and M Balakrishnan

Research universities across the world form the largest centres for research; the other two categories of research centres are private R&D labs and government labs. But whereas in the developed world, universities also get the largest share of research funding from the government, in our country, such support lags way behind. Only about 10% of government research funding goes to universities.

The low level of funding support apart – changing this, although sorely needed, will require major policy shifts and infusion of funds – there are too many constraints on research grants here and not enough incentives. As a result, whereas in a country like the US, professors spend a lot of effort getting grants, in India, neither the universities nor faculty members are so driven. And this lack of a strong desire to go after research grants makes research funding a government's most powerful tool for directing research, a rather toothless tiger.

There are three main constraints in the conditions that accompany government research grants which, if relaxed, can potentially have a dramatic effect on the research landscape.

Perhaps the single biggest factor that motivates faculty in the US to compete vigorously for research grants is the provision of a 'summer salary' in these grants. The yearly compensation of faculty in the US is for nine

months, allowing faculty to earn up to three months' salary from research projects. In other words, a faculty member can earn up to one-third more in a year through research grants.

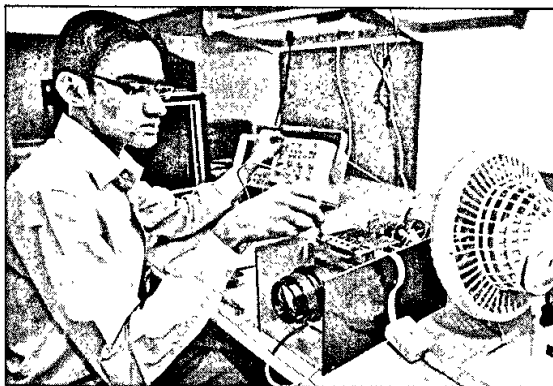
This is a brilliant policy which creates a huge incentive for faculty to get grants, and then to deliver the research output promised in order to secure grants in future as well. And it keeps the incentive limited, preventing it from being entirely money oriented, since a faculty member can only earn some fraction of his salary even if he has a multimillion-dollar grant.

In India, research grants do not allow any such incentive for

6 The lack of a strong desire to go after research grants makes research funding, a government's most powerful tool for directing research, a rather toothless tiger

the researchers. Just allowing for the faculty member to get some percentage of his salary from a project can dramatically change the sponsored project scenario. The drive to get grants will bring about better proposals and the faculty will strive harder for more and higher quality research.

Second, most grants have a travel component in their budget which is generally used to attend conferences and meetings. In India, we still impose a restriction



A valuable resource that needs to be tapped

that the travel budget is only for domestic travel; international travel is allowed only with permission from the granting agency. This is despite the fact that the best conferences are held abroad and, in many fields, a critical mass does not even exist to support high quality national conferences.

This means that if a researcher does some high quality work which is accepted in an important international conference, he cannot use the grant's travel budget to attend. On the one hand, we expect institutions to be competitive globally and complain when researchers do not measure up to global standards – but on the other, we deny them the travel support that would enable them to be members of the global research fraternity. This is perhaps a legacy of the times when foreign travel

was considered a luxury.

These two factors together, along with the fact that most postgraduate students in elite institutions get scholarships/assistantships directly from government funds and are not funded through research grants, have robbed researchers of all incentive. No wonder many faculty members even in IITs don't care much for grants from government agencies but are very keen on private agencies due to the flexibility they offer.

Thirdly, current policies have minimised incentives for institutions to go after grants. Grants allow for an overhead for the institute where the researchers will do research. This overhead is for infrastructure and other support the institute has to provide. In the US, the overhead is often around 50% (and sometimes even higher), which is a more

realistic estimate and also creates an incentive for the university.

In India, the overhead allowed is 15% to 20%. This is actually less than the real overhead cost. In fact, the host university usually ends up spending considerably more than the overhead it gets. This small and unrealistic overhead provides very little incentive for an institution to encourage its faculty to go after grants. But as more and more institutions emerge using the private-public partnership model – often with corporates involved – there is an opportunity to change this and promote greater competition.

If the government is serious about encouraging researchers and institutions to pursue research vigorously – which would also enable it to sell its agenda via funding – three small changes can totally transform the scenario. It should allow for higher overheads of about one-third of the project cost, allow for some limited personal compensation to the principal investigators, and not distinguish between domestic and foreign travel.

By dramatically changing the research scenario, these steps would make faculty careers a bit more attractive, which can help research institutions like the IITs attract more faculty – a problem all institutions are grappling with. And all this at a very limited cost. All it requires is a change in attitude.

Jalote is director, IIT Delhi, and Balakrishnan is deputy director, IIT Delhi.

GMAT Applicants are Getting Younger, Pickier Over Time

Number of examinees from Asia below the age of 25 nearly doubles in 5 years

ALISON DAMAST

The number of test takers taking the Graduate Management Admission Test (GMAT) today are younger than their counterparts five years ago, and are increasingly turning their sights to graduate masters programmes in management and finance, over the traditional MBA, according to a report released today by the Graduate Management Admission Council, the group that administers the GMAT exam.

"The GMAT pipeline as it relates to prospective MBA students is almost entirely different today than it used to be," said Alex Chisholm, GMAT's senior manager of statistical analysis. "While it might be one exam, I think it is increasingly reflecting two distinct pipelines in management education today, both the MBA programmes and specialised masters programmes." As the global management education landscape has shifted over the last five years, so has the profile of those taking the GMAT exam, the standardised test used by graduate business programmes.

Over the last five years, the number of GMAT exams taken has grown by 18%, with 263,979 examinees taking the test in 2011. The vast majority of growth occurred outside of the US, according to GMAC's 2011 World Geographic Trend Report for GMAT Examinees.

The primary study destination for the majority of examinees remains the US but the overall proportion of people sending GMAT reports to US schools is declining. Only 77% of score reports sent last year were directed towards US schools, down from 83% four years ago, GMAC said. That shift has been more pronounced in some regions of the world, like Central and South Asia, where last year only 55% of those who took the GMAT sent their scores to US schools, down from 67% five years ago.

The Big Leap

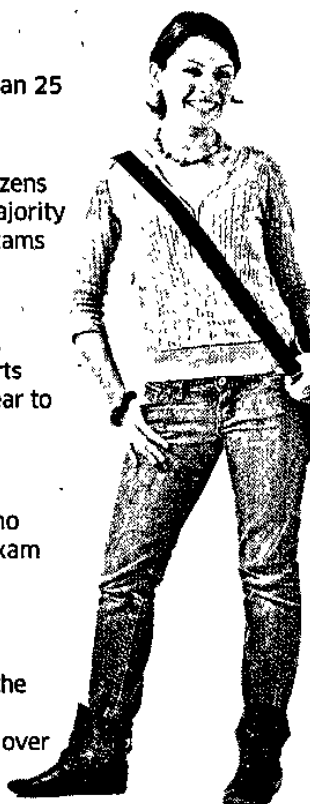
44%
Examinees younger than 25

55%
Non-US citizens took the majority of GMAT exams in 2011

77%
Score reports sent last year to US schools

41.4%
Women who took the exam in 2011

18%
Growth in the number of examinees over 5 years



SOURCE: GMAC 2011 WORLD GEOGRAPHIC TREND REPORT

"We've seen a lot of schools around the world start to use the GMAT in the admissions process, so they now have more options closer to home and are exercising that ability to send scores locally," Chisholm said.

All of the regions surveyed in the report had more test takers in 2011 than in 2007, with the exception of the US, where the number of people taking the GMAT "now sits near the pre-recessionary levels" of five years ago, GMAT said.

In the last five years, Europe has edged ahead of Canada as the second leading

destination for GMAT scores after the US, while Hong Kong jumped from ninth to seventh place over the same period. Last year, non-US citizens took the majority, or 55%, of GMAT exams, which GMAT said is the "highest proportion on record."

The first year this group made up the majority of examinees was in 2009, and that number has continued its climb upwards since then. Said Chisholm: "It is a pretty big shift."

Much of the growth in GMAT test volume is being driven by examinees from East and Southeast Asia, especially China, which represents 70% of testing volume in the region, Chisholm said. In East and Southeast Asia, just 40% of test takers sent their scores to an MBA programme in 2011, down from 64% five years ago, the "lowest level of any world region" in the report, GMAC said.

At the same time, the proportion of examinees younger than 25 soared during that same period, jumping from 32% to 61%. Many of these test takers are young women under the age of 25 flocking overseas to accounting and finance programmes, hoping to get an edge in Asia's burgeoning job market, Chisholm said. This demographic age shift may not be quite as pronounced in other parts of the world, but it is evident across the board. The proportion of exams worldwide taken by men and women younger than 25 has increased from 37% to 44% over the last five years, according to the report.

Another important but subtle change is the number of women taking the exam, which was 41.4% in 2011, the highest number ever, the report said. Chisholm said he expects this number will continue to inch upwards, especially as more women seek out specialised masters degree programmes in the coming years.

Check Out, World's Going to FLIP

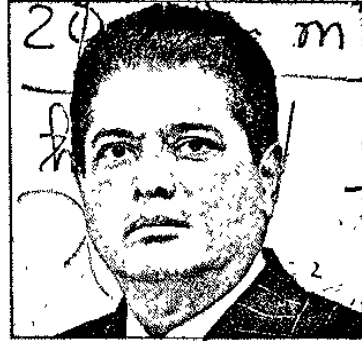


ISHANI DUTTAGUPTA
NEW DELHI

It is as fast as lightning, it is cool, it is going to change the world as fundamentally as did manned flight and it has been created by an Indian, Raj Dutt... Okay, Stanford, MIT and the US Navy chipped in. We are talking about a new technology called Fully Laser Integrated Photonics (FLIP) which will replace conventional electronics in a whole lot of computing and cut down computing's ever-rising demand for power by an order of magnitude.

FLIP has been enabled by a breakthrough in the science of materials just announced in the US: Indian American scientist and entrepreneur Dr Birendra (Raj) Dutt along with a top team of researchers at his own company APIC Corporation, the MIT and Stanford University has discovered how to make germanium produce a laser when charged with electricity. This would eventually allow a new breed of microchips to be built on a commercial scale in which pulses of light, called photons, zip at top speed along nano-sized waveguides of the self-same germanium etched into silicon, instead of electrons whizzing around in copper circuits on silicon.

When electrons move through a conductor, they produce heat, which then has to be removed using additional energy. Photons, on the other hand, do not produce heat as they move through their waveguides at the speed of light, hence no energy is required to cool photonic chips. Further, use of doped germanium together with the straining of this material when grown on silicon produces a laser that makes mass commercial production of photonic



Raj Dutt of APIC Corporation

chips possible.

Germanium belongs to the same group of elements as silicon, making full integration of laser chips possible. While use of photons in chips is not new, till the present discovery of making germanium 'lase', it had not been possible to have integrated photon chips.

Dr Dutt, an IIT-Kharagpur, aeronautical engineering alumnus of the class of 1971, founded APIC Corporation in 1999 for research, development and production of highly integrated photonic and electronic technology -- today it has a wholly-owned fabrication facility in Honolulu. The breakthrough research, which was achieved under a US government contract, was sponsored by the Naval Air Systems Command, Aircraft Division and the National Security Agency NSA and funded by the US department of defense.

Dr Dutt along with his co-investigator, Dr Jurgen Michel, senior research scientist at MIT, succeeded in getting germanium, to lase when electrically pumped. "The new photonic chips will have exponentially better performance at a tiny fraction of current power usage, and a positive impact on the environment through drastic reduction of heat generated by computing devices," Dr Dutt told ET from his office in Culver City, California.

N-E Opens Doors to Private Varsities

States give a push to investment in attempt to keep students from going elsewhere

M/MA/PV

BIKASH SINGH
GUWAHATI

Policymakers in northeast India are finally creating a framework and inviting private investors in higher education, filling a glaring shortage that has in the past seen students in the region migrating to the rest of the country.

The sector has till date received investments to the tune of Rs 300 crore, and projects worth Rs 200 crore are in the pipeline. At least three to four private universities are looking to soon start operations.

"There is a huge demand for higher education institutions. Our foray in this sector has been met with a very positive response from students," says Stephen Mavely, vice chancellor of Don Bosco University in Guwahati.

Some of the initiatives are in the public private partnership mode. Meghalaya, for instance, has inked a memorandum of understanding with International Finance Corporation for starting the Shillong Medical College. The Assam government, in partnership with the Tata Group and Oil India, is starting the Indian Institute of Information Technology and Advanced Sciences (IIITAS), which, says chief minister Tarun Gogoi, will cover the advanced and applied sciences. "Emphasis would be on industry-interface research and development relevant to Assam, besides skill development, helping the youth of the state to be employable here and elsewhere."

While the Centre will hold a 57.5% stake in the project, the state government will hold 35%, and the Tata

Group and OIL will hold the remaining stake, says education minister, Himanta Biswa Sarma. "Our initial estimate for this project was around Rs 127 crore, but this will now go up," he says.

Nearly 3,75,311 persons from the the region migrated to other states in 2007-2008, according to an National Skill Development Council study on development and employment generation potential of the northeastern states. The majority of migrants were from Assam, followed by Sikkim and Tripura.

In an attempt to keep the flock home, Assam and Meghalaya have seen at least five private universities starting courses. The privately-run Kaziranga University will commence MBA and engineering courses in Assam by July this year. Anil Saraf, vice president of

the Northeastern Knowledge Foundation, which is starting the university, says the group is initially investing around Rs 100 crore into the project, but will scale up the investment to nearly Rs 300 crore in the next few years.

Higher education has received Rs 300 cr in investments, and projects worth Rs 200 cr are in the pipeline

The campus, on 50 acres, hopes to attract students from Bangladesh, Bhutan and Nepal. "We will also collaborate with foreign universities and initiate joint programmes and research," says Saraf.

There is a lot of demand for engineers in northeast India as huge projects in the infrastructure sector are being implemented here, adds SK Mahanta, CEO of MMS Advisory, a higher education consultancy. "Students in engineering colleges of the region are getting good campus placements," he adds. Several new universities, piloted by local promoters, are in the pipeline, he says.

Business Line ND

21/02/2012 P-13

Political & Business Daily ND 21/02/2012 P-7

Bengal plans 15 new medical colleges in 3 yrs

Our Bureau

Kolkata, Feb. 20

The Commerce and Industry Minister of West Bengal, Mr Partha Chatterjee, has said that the State government would set up 15 new medical colleges in the next three years to ensure quality healthcare to its people.

Addressing the launch ceremony of a pharmaceutical company, Hygieia Biogenics, Mr Chatterjee said that in addition to new medical colleges, the State government was also looking to expand the chain of primary health centres (PHCs) and to set up one multi-speciality hospital in each sub-division.

The State government is also aiming to set up two drug formulation units in North Bengal and Howrah district through PPP (private-public partnership) route.

The State government is also planning to set up an R&D centre for research on vaccines and life-saving medicines, he said.

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Super 30 Maths wizard honoured in Canada

TORONTO, FEB 20

ANAND Kumar, who shot into fame with his 'Super-30' programme that prepares underprivileged students for the challenging IIT exams, has been honoured in Canada for his contributions to the society.

"Your exceptional teaching career is laudable. I am pleased to welcome Anand Kumar to British Columbia for his remarkable way of spreading the light of education in the darkened corners of the society," Naomi Yamamoto, the Minister for Advanced Education of British Columbia said while welcoming Kumar to the Canadian province.

Marc Dalton, MLA, initiated a proposal in the British Columbia legislature to honour Kumar. The proposal was passed unanimously.



"His inspiring tale is something that can act as a big motivation for all teachers. He deserves to be honoured," he added.

At a glittering function in Vancouver, Dalton presented a citation on behalf of the government to Anand.

In his address, Anand said he was overwhelmed with the honour.

"But it is my entire team and the hard work of the underprivileged students that deserves this honour. I am just doing what is close to my heart, as it gives me pleasure," he added. —PTI

Publication: The Times Of India Delhi, Date: Feb 21, 2012; Section: Front Page; Page: 1;

AMU library out of bounds for undergrad girls

Varsity Offers Overcrowding As Weak Alibi

Manash Pratim Gohain | TNN

New Delhi: Students of the Women's College in Aligarh Muslim University are waging a bitter struggle for a facility their peers in other institutions would take for granted – access to the university's central library.

Now, in a concession to these undergraduate women students, AMU has provided them online access to the catalogue of books. The varsity says the girls can choose the books which would then be issued and delivered to them.

The 100-year-old Women's College, a constituent of AMU – a central university which had built a reputation for an enlightened social outlook – is housed in the fortress-like enclosure of Abdullah Hall. Except for professional courses, this is the only college providing undergraduate education to women in the university.

Women boarders of the hall are not allowed out of the college campus except on Sundays, so membership of the university library is ruled out. Even day scholars are not allowed into the library. University officials have told the HRD ministry this is to avoid overcrowding, but protesting students aren't convinced. A delegation recently made a

Times View

It is shocking that a place of learning as respected and well-established as Aligarh Muslim University should discriminate against female students in prohibiting them access to the library. The fact that it is a central university only makes it all the more unacceptable. The notion of segregating boys and girls in an institution of higher learning and that too in the place that is supposed to be the repository of knowledge – the library – has no place in a modern society and the government certainly should not be party to the continued existence of such practices. This should not be viewed as an issue of religious sensibilities but one of gender rights. The government should demand immediate access for all girl students to the library.

representation to HRD minister Kapil Sibal alleging gender discrimination and demanding they be allowed to use the Maulana Azad Library, considered one of the best in Asia. Though the college has its own library, the central library is far better.

Politicians like Brinda Karat have also taken up the issue. Following letters sent by the ministry, the university decided to allow online access of the library's catalogue of books. It refuted charges of gender discrimination, saying postgraduate women students had access to the library.

► Teachers trash logic, P 14

Publication: The Times Of India Delhi; Date: Feb 21, 2012; Section: Times Nation; Page: 14;

Teachers trash AMU's argument

► Continued from P1

According to university officials, the rule is in place to avoid overcrowding of the library," an HRD official said. The official said the ministry did not wish to press the matter as it "respected the autonomy of the institution".

But teachers and students of the college leading the struggle trashed the "overcrowding" argument. "One can go all the way to deliver the books to girls of Women's College but not let them visit the library on their own? If this is not discrimination then what is? Logistics can be managed if they really want to let girls access the library," said Shadab Bano, assistant professor of History at Women's College.

HindustanTimes

Title : Parents should not burden child with own ambitions

Author : Jaya Shroff Bhalla jaya.shroff@hindustantimes.com

Location : NEW DELHI:

Article Date : 02/21/2012

Parents should not burden child with own ambitions

BOOSTING CONFIDENCE Instead they should focus on providing their child with emotional support



Jaya Shroff Bhalla

■ jaya.shroff@hindustantimes.com

NEW DELHI: Pratima Swaroop, an East of Kailash resident, whose daughter Tripti is appearing for the Class 12 Boards, said that she has taken some days off from work to be with her daughter who, she says, she needs complete attention and care.

Swaroop wakes up early in the morning to wake her daughter up and fixes her breakfast.

When asked about how nervous she is, she said, "I am very anxious. It feels like I am going to sit for the Boards. I was never this nervous during my exams, but now there is so much more competition."

The feeling is echoed by

Archana Kapur, whose son Pranav, will also be appearing for his Boards this year. Kapur, who works at a private bank has taken 15 days off work. Later, her husband will do the same.

EXPERT ADVICE

Psychologists say that several parents relive their exam days through their child's exam. It is not fair on the child or the parent.

Psychiatrists say that these days the anxiety levels among parents is much higher than the child.

"We have seen this trend in our clinics. Parents, especially mothers, are more stressed. Working parents alter their timetables and take leaves from work to be with the child all the time. Sometimes it helps, but a lot of times the over-involvement of parents only adds to the child's pressure," advised Dr Rajesh Sagar, consultant psychiatrist at the All India Institute

STRESS ATTACK

Just the idea of taking a test can send some children in panic mode. Keep an eye out for the following:

PHYSICAL SYMPTOMS OF STRESS AND ANXIETY

- Lack of sleep
- Difficulty in breathing
- Addictive behaviour such as smoking or drinking
- Nail biting, stomach pain
- Loss of appetite or irregular eating.

EMOTIONAL SYMPTOMS

- Excessive or uncontrollable crying
- Aggression or mood swings
- Panic attacks
- Negative comments such as, "I'll never pass this test, I don't even know why I'm trying."

of Medical Sciences.

"While it is important for the parent to provide emotional support to the child, over-protectiveness and over-involvement may sometimes amplify the anxiety levels in the child," he said, adding, "They should inculcate a normal routine in the child instead of reminding them about exams and studies."

DON'T GO OVERBOARD

Have realist expectations, say psychiatrists to parents, who tend to burden their child with sky-high expectations. While good scores are important, they are certainly not the end all.

Experts say that as a parent, one can play a very important role in helping the child de-stress. "Be a good listener.

Encourage your child to talk about his/her anxieties and help them get over them by boosting their confidence. Remember, exams definitely are not the end of the world," advised Dr Jitendra Nagpal, senior psychiatrist at Moolchand Medicity.

"Just a fortnight short of the Board exams, it is important for families not to burden their children with their own unfulfilled desires. This is not only unnecessary, but also increases the stress of the child manifold," said Nagpal, who counselled two sets of parents at his outpatient department on Monday.

"Worst things that they can do to their children at this time is knowingly or unknowingly displace their anxiety on children," said Dr Puneet Dwivedi, consultant psychiatry at Max Hospital.

"It is important that parents do not overdo things. It is essential they they strike a balance," he said.

इकनामिक ग्रोथ की धुरी बनें विश्वविद्यालय

अगर वे थ्योरी के बजाय एप्लाइड साइंस पर ज्यादा ध्यान दें तो देश के साथ-साथ खुद उनका भी भला होगा

टीटी राम मोहन II

थ्योरी या एप्लाइड साइंस, शिक्षा के इन दो पक्षों को लेकर अक्सर बहस की जाती है कि आखिर विश्वविद्यालयी शिक्षा का जोर किस तरफ हो। क्या विश्वविद्यालयों को सैद्धांतिक शिक्षा पर ज्यादा ध्यान देना चाहिए, या फिर समाज और देश की तरक्की को ध्यान में रखते हुए एप्लाइड साइंस पर जोर देना चाहिए। कई लोग विश्वविद्यालयों की बदली भूमिका के हिमायती हैं। वे चाहते हैं कि विश्वविद्यालय देश की तरक्की में हाथ बटाए। ऐसी गतिविधियों में हिस्सा लें, जिनसे अर्थव्यवस्था मजबूत हो। सिर्फ किताबों-कॉपियों के पन्ने ही न पलटें। हाल में आई एक किताब 'क्रिएटिंग द मार्केट यूनिवर्सिटी' में अमेरिकी विश्वविद्यालयों की बदलती भूमिका पर विस्तार से चर्चा की गई है।

बेरमन की बात

किताब की लेखिका एलिजाबेथ पोप बेरमन का कहना है कि अमेरिकी विश्वविद्यालय बाजार अर्थव्यवस्था में एक बड़ी भूमिका निभा रहे हैं। वे ऐसे काम कर रहे हैं जिनसे देश के उद्योग जगत को बहुत लाभ हो रहा है। वे तरक्की के वाहक हैं। नए प्रयोगों की अगुवाई कर रहे हैं। बेरमन का कहना है कि अमेरिकी विश्वविद्यालयों की बदलती भूमिका के पीछे कोई सोची-समझी रणनीति नहीं है। किसी विशेष विचारधारा के दबाव, मसलन पूंजीवाद को बढ़ावा देने के लिए अमेरिकी विश्वविद्यालय ऐसी पहल नहीं कर

रहे। वे ऐसा सिर्फ इसलिए कर रहे हैं ताकि देश की अर्थव्यवस्था को प्रोत्साहित किया जा सके। इसका महत्व भी सभी समझ रहे हैं। सरकार भी। उद्योग जगत को तो इसका फायदा है ही। वे समझ गए हैं कि विश्वविद्यालयों को सिर्फ नए प्रयोगों का बौद्धिक आधार नहीं बनना चाहिए। उन्हें नए प्रयोगों की अगुआई भी करनी चाहिए।

कई तरह का जुड़ाव

अमेरिकी विश्वविद्यालय तीन तरह से बाजार अर्थव्यवस्था के साथ जुड़े रहे हैं। उनकी बायोसाइंस फैकल्टी उद्यमियों के साथ काम करती है। वे अपने आविष्कारों का पेटेंट करवाते हैं। उद्योग जगत के सहयोग से यूनिवर्सिटी इंडस्ट्री रिसर्च सेंटर (यूआईआरसी) बनाए गए हैं। पहले अनुसंधान का काम एकेडेमिक लोग निजी स्तर पर किया करते थे, लेकिन अब यह जिम्मा विश्वविद्यालयों ने उठा लिया है।

विश्वविद्यालयों की बदली भूमिका का एक

बड़ा कारण बायोटेक्नोलॉजी के क्षेत्र में आया उछाल ही था। यह ऐसा क्षेत्र था, जो शुरू से ही शिक्षा से जुड़ा हुआ था।

कई बायोटेक्नोलॉजी कंपनियों की शुरुआत एकेडेमिक्स के ही हाथों हुई है।

कई कंपनियों के एडवाइजरी बोर्ड में एकेडेमिक्स को जगह दी गई।

कंपनियों को इस क्षेत्र में उनकी सलाह की जरूरत थी। शुरू में बायोटेक

कंपनियां सिर्फ दवाएं बनाने का काम करती थीं। इन कंपनियों को चिकित्सा

विशेषज्ञों की जरूरत थी। इसलिए शिक्षाविदों को इन कंपनियों का सलाहकार बनाया गया

ताकि उनकी विशेषज्ञता का फायदा उठाया जा सके। ये लोग मॉलिक्यूलर बायोलॉजी या बायोकेमिस्ट्री के एक्सपर्ट थे। फिर कृषि, खनन, रसायन और पर्यावरण जैसे क्षेत्रों में बायोटेक्नोलॉजी का दखल बढ़ा और इनके विशेषज्ञों की भी पूछ बढ़ती गई। सत्र के दशक से पहले विश्वविद्यालयों का पेटेंटिंग से कुछ लेना-देना नहीं था। वे अपने अनुसंधानों को

करवाया जा सकता था। इसके बाद सैकड़ों अनुसंधानों को पेटेंट करवाया गया। 1980 में जहां सिर्फ 400 पेटेंट इश्यू किए गए, वहीं 1990 में इनकी संख्या 1100 तक पहुंच गई। एक और तरीके से अमेरिकी विश्वविद्यालय बाजार अर्थव्यवस्था के करीब आए। यूआईआरसी यानी अनुसंधान केंद्रों के गठन से सभी पक्षों को फायदा हुआ। 1990 में ऐसे केंद्रों की संख्या एक

जगत के बीच सहयोग के उदाहरण मिलते थे। तब रिसर्च सेंटरों की जगह इंटरियूल पार्क होते थे। लेकिन उनका ताल्लुक बायोटेक्नोलॉजी से नहीं था। इन पार्कों में इलेक्ट्रॉनिक्स, मेटिरियल साइंस, कंप्यूटर एड्ड डिजाइन और मैनुफैक्चरिंग जैसे क्षेत्रों में अनुसंधान होते थे। इन सभी का खर्चा सरकार उठाती थी।

थ्योरी में भी बेस्ट

बेरमन को इस प्रेजेंटेशन के कुछ दूसरे पहलू भी हैं। अमेरिकी विश्वविद्यालयों में एप्लाइड साइंस पर पहले से ज्यादा जोर दिया जा रहा है, पर उनके अनुसंधानों ने अर्थव्यवस्था को कितना फायदा पहुंचाया है, इसके ठोस आंकड़े किताब में नहीं मिलते। न ही किताब में इस सवाल का कोई जवाब मिलता है कि विश्वविद्यालयी अनुसंधानों पर कुल राजस्व का कितना हिस्सा खर्च किया जाता है। उद्योग जगत के मुकाबले विश्वविद्यालय इन पर कितना खर्च करते हैं, इसका जवाब भी किताब में नहीं है। बेरमन को किताब से एक और सच्चाई का खुलासा होता है। सरकारी व्यय में कटीती के साथ अमेरिकी विश्वविद्यालयों ने पेटेंट से होने वाली इनकम को अपनी आमदनी बढ़ाने का जरिया बनाया है। एप्लाइड रिसर्च पर ज्यादा ध्यान देने से थ्योरिटिकल रिसर्च प्रभावित नहीं हुई है। अमेरिकी विश्वविद्यालय अब भी टॉप क्लास की थ्योरिटिकल रिसर्च कर रहे हैं। अमेरिकी विश्वविद्यालय मार्केट ओरिएंटेड हो रहे हैं, लेकिन वे अब भी बेस्ट हैं। दूसरे देश भी इससे सबक ले सकते हैं।

(लेखक आईआईएम, अहमदाबाद में प्रोफेसर हैं।)



■ लैब को कारखानों से जोड़ना होगा

पेटेंट भी नहीं कराते थे। उनका मानना था कि वे जो अनुसंधान करते हैं, उसका लाभ सभी को मिलना चाहिए। फिर उनकी सोच बदली। उन्हें महसूस हुआ कि अनुसंधानों को पेटेंट कराने से उद्योग जगत को लाभ होगा। अस्सी के दशक में अमेरिकी संसद ने भी उनकी मदद की। 1981 में उसने एक ऐसा कानून बनाया जिसके तहत सरकारी मदद से किए गए अनुसंधानों को पेटेंट

हजार के करीब थी। इन केंद्रों के लिए उद्योग जगत से ज्यादा खर्च विश्वविद्यालयों और केंद्र व राज्य सरकारों ने किया। खर्च का सिर्फ 31 परसेंट उद्योग जगत की तरफ से आया। इससे उद्योग जगत की पी बारह थी। उसे सबसिडाइज्ड रिसर्च का फायदा मिल रहा था, यानी कम निवेश पर अच्छा मुनाफा। इससे पहले भी अमेरिकी विश्वविद्यालयों और उद्योग