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Life skills to thrive in the changing world

Suchibrata Chellang

orld Youth Skills Day is observed on July 15 every year. This day is to celebrate the sig-

nificance of equipping young people with skills that enable them to get employment, decent work and become entrepreneurs. This year's theme is 'Skilling Teachers, Trainers, and Youth for a transformative future'. There is no doubt that teachers, trainers and educators play a significant role in moulding the youths and transforming them into human capital. Hence, the moulders must be enriched with the requisite skills. This article is intended to reflect upon those skills which are invaluable for teachers, trainers and youths but are often forgotten or ignored.

Skilling youths of India needs to be geared up as the country has the largest youth population in the world. According to ILO statistics, in India at present 66 per cent of the total population (more than 808 million) are below the age of 35 and the labour force is set to grow by over 8 million per annum. Again, the World Economic Forum's Future of Jobs Report 2023 states that the proportion of youths not in employment, education or training (the youth NEET rate) is 28 per cent in India. This high rate of NEET and the growing labour force are major challenges for policymakers in India in terms of creating decent work. However, the encouraging fact is that the Govt of India is creating an enabling environment for youths by taking the 'Skill India' initiative, Schemes like Pradhan Mantri Kaushal Vikash Yojana (PMKVY) and MUDRA are implemented for steering skill development and encouraging entrepreneurship in the country. Right from aquaculture to aviation, a large number of skill development courses are offered across different sectors in the country which are compliant with the recognised standards of the National Skills Qualifications Framework (NSQF).

Learning resources and instructional materials are made available by the National Skill Development Corporation (NSDC) through the 'eskill' portal. A lot of progress has also been made in setting up technical and vocational institutions and institutes of entrepreneurship. Efforts are also made for capacity building of teachers and trainers in the country. The National Education Policy (NEP) 2020 also has given special emphasis to vocational education through the integration of vocational education with general education.

The point that may be left unnoticed in the noise of skill development is the lack of life skills by the youths to face the realities of life. Youths today are badly affected by fear of job loss.

As the world has faced the implications of globalisation, economic crisis, recession and Covid-19 pandemic, resilience has become inevitable for sustainability. Top companies across the globe are often found making news headlines for adopting layoff as a cost-cutting measure. Automation is another force that has wiped out the need for human power in many sectors. In these volatilities, vouths remain vulnerable. The Future of Jobs Report 2023 is stating disruption of 44 per cent workers' skills by the next five years. Vocational skills they acquired earlier may become outdated in the coming days. Therefore, it is now important to adopt a coping strategy by the youths to smoothen their life and work. As Industry 4.0 has impacted almost all the sectors of the economy, the new technologies including AI, big data, machine learning and robotics have invited worries as well as opportunities for youths. Youths need to be aware of all these changes. They are required to be lifelong learners for capitalising on these opportunities. New skills need to be acquired or the existing skills need to be upgraded as the job roles demand. It is the life skills that enable youths to be adaptable to the changes and challenges.

According to the World Health Organisation (WHO), life skills are "Psycho-social abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life." The 10 core life skills laid down by WHO are self-awareness, empathy, critical thinking, creative thinking, decision-making, problem-solving, effective communication, interpersonal relationship, coping with stress and coping with emotions. These skills are even found to be ranked in the top 10 core skills sought by companies all over the world as stated in the Future of Jobs Report 2023.

Life skills prepare an individual to live independently and productively within a society. For example, children assisting their parents in doing household chores learn to do routine works themselves like washing their garments, cooking their food, caring for their household pets, etc. Through these works, they learn to manage themselves and act responsibly. Their decision-making and problem-solving improve as well, as they encounter the usual problems in daily life. Life skills help youths to understand the purpose of life and find joy in work and life and this increases their overall well-being. Although it is not difficult to acquire life skills, it is not pos-

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sible to learn them in a single day or within a few hours. These can be acquired from day-to-day life beginning from their childhood. Some may learn them without their knowledge and for some others life skills need to be taught. Here there are roles to be played by parents, teachers, trainers as well as the youths. Educators can teach life skills in the classroom. Life skills can be taught by parents and loved ones as they go about their daily routines. Research says that a sedentary lifestyle is a big obstacle in the path of acquiring life skills.

Indeed, youths need to acquire jobspecific skills or upgrade their existing skills to make them employable and relevant for job roles in a changing world. At the same time, youths also need to learn and exercise life skills. Life skills in humans can never be replaced or replicated by any machine or technology like emotional intelligence or artificial intelligence. Jobs that demand creativity and originality, can never be replaced by AI technologies and automated processes. Job roles in sectors like hospitality, social work, etc., require social and emotional skills on the part of service providers. With this utter reality in mind parents and teachers must put their efforts into developing life skills in youths. And life skills must be included as input material in the skill development curriculum. AT/1516

DECCAN HEARLD (P-6), 15 JULY 2023

LASSROOMS TO GILDED CAGES

Cost of commercialisation

Market-driven education perpetuates privilege, social hierarchies and marginalises study of humanities

SURAJIT C MUKHOPADHYAY

Detailed Section Totakahini (The Parrot's Training) by Tagore in 1918, foresaw the state of education we are now in, although it was originally meant to be a metaphorical critique of the recommendations of the Calcutta University Commission (1917–1919) and a review of the colonial model of education prevailing in British India. Today, we are witnessing a robust corporatisation of higher education supported by the State, which aims to build 'gilded' cages, echoing Tagore's words in *Totakahini*.

The transformation of higher education in India is of critical importance, not just from a pedagogical perspective, but also due to its political and intellectual implications. The new experiments and structures reflect the dominant ideology of the ruling classes and the elite. This transformation aligns with the ascendant neoliberal world order that has effectively shaped the State and society to conform to market forces. Consequently, we find ourselves in a market-driven society where learning and educational institutions have become corporatised entities offering services for a price.

This shift has not only commercialised learning but has also had subtle but profound effect on many people. There are many ways in which we may see the impact of this, but I would like to highlight only a couple of them.

In the commercialised world of education, students are consumers. They consume what the institution has to offer, which in turn is determined by market perceptions. The institution would logically offer what it could sell. In the lexicon of neo-liberal pedagogy, this is 'outcome-based' pedagogy. 'Outcome-based' pedagogy creates a false hierarchy of learning values and marginalises fundamental and critical subjects, especially those that belong to the human sciences. The emphasis is squarely on learning skills and preparing the student to get a job. It is not a problem-posing pedagogy that is employed, but one that sees the student as a recipient of information. It emphasises transfers from teacher to student and marginalises a reflexive and interrogative learning experience. In other words, the pedagogy is tuned to the idea of 'fitment' - it aims at 'fitting' the student in the neoliberal milieu to maintain the status quo and the hegemony of the political order. Its main aim is to create docile learners who pay obeisance to capital and an imagined past. The student-consumer becomes wary of inquiry, dialogue, and critical learning because she sees them as barriers to the splendorous opportunities that the market has to offer. Conformity rather than the liberation of the mind



becomes the *raison d'etre* of her existence as a student.

The second is more invidious. Privatisation of education effectively creates hubris, where the student'knows that she is at the top of the pecking order on the strength of family wealth and that she 'deserves' to be there. Others who have not secured their places in the gilded edifices of higher learning must therefore be of lesser 'merit' and worth. Education of this type removes the individual from the larger community of learners and positions her in the abstract as an isolated and unattached individual who can only improve her lot through a lonely march to the top of the corporate ladder. In this struggle, she can be conscious only of herself and of those whom she considers her superiors. In doing so, she creates a pecking order devoid of other people and their consciousness by inhaling the wafting fragrance of exhilarating success and

forgetting the role of luck, good fortune, and parental wealth that played a significant role and helped her on her way.

This smugness about success is the foundation of neoliberal pedagogy and its institutional avatars. For the individual, it gives the assurance that their position is much deserved and that those who could not make it deserve their fate too. Having eliminated by dint of the market mechanism those who could have challenged the hubris of the 'deserving', their ideology becomes the companion to the politics of authoritarianism and technocratic fixes. It is this interface between the skilled corporate manager and the polity at large-bereft of conscience-that contributes to the creation of dangerous politics-a politics of one-dimensionality that can only measure success through the prism of what one earns. This demolishes the idea of education as one that is transformative and reflexive simultaneously and, more pertinently, that which contributes to the common good. It may well be argued that this unreflective institutional approach to learning contributes in no small measure to the dangers that have vitiated our state and society and threaten to further exacerbate the rise of hate and sectarianism.

While the citizens of Karnataka may have paused the hate juggernaut in the recent assembly elections, we have no estimate of the poison that has managed to seep into the body politic. Our democracy and, with it, the lives of many millions depend on how we go about reclaiming humanity and dignity for all.

To cleanse the polity of the accumulated detritus, it is important that we see the linkage between the shrinking ambit and substance of education and the rise of an authoritarian dispensation that banks upon an uncritical and unreflective pedagogical approach to education. Once we can call the bluff of the golden cage and see through the trap that awaits the unwary, we may be able to restore the democratic values that we are losing each day. For this to happen, we require a robust and thriving pedagogy that liberates the soul, interrogates hubris, and opens the world of dialogical learning. There are certain things money can't buy; for everything else, there may be a MasterCard!

(The writer is a professor and dean at the Royal School of Humanities and the Social Sciences, Assam Royal Global University.) \mathfrak{D} $\mathfrak{h}[15]_6$

Going Against Convent-ional School Wisdom

Why are church-run schools now being passed over by the very classes that once exalted them?





It has been more than 40 years since I met most of the 'girls' of my batch of a convent school I attended in New Delhi, as I left after Class 8 to go abroad. Thanks to the efforts of a few enthusiastic batchmates, though, more than two-thirds of us have coalesced again in a merry WhatsApp group, spread across at least four continents and many time zones. And the main objective is a grand winter reunion in India.

When I was growing up, missionary or 'convent' schools had a cachet for Indians. In the 1970s, at least some of the 'sisters' and 'brothers', the nuns and monks who ran Christian schools in India, were foreign and many of the teachers were Anglo-Indian. They were famed for their devotion to education, both in academic subjects and sports while "Indian" schools, barring a few, were still to prove their mettle.

So the aspirational middle class sent its progeny, especially daughters, to church schools. That is probably why my mother decided I would attend a church-run school even in New York, contrary to the trend abroad. I was the only non-Christian in the school and thoroughly enjoyed my years there. Her decision made my reassimilation into the Indian system easier as I joined a convent school back home too.

The hallmarks of "convented" girls hailed in Indian matrimonial ads have always been largely mythical, of course. The nuns drilled a few key things into our young minds, including a lifelong penchant for impeccably ironed clothes in my case. But the girls in my convent batch were no different from those from my public school on substantive issues, as their subsequent professional and personal paths demonstrate.

Female batchmates from both of my schools opted for similar careers in medicine, banking, law, consulting, civil services and academia, reflecting the available options of our time. My 'convented' batchmates did not only (or even mostly) become homemakers, contrary to conventional wisdom on the real purpose of a convent school's supposed stress on discipline, obedience, morality and modesty.

But convent schools are now regarded as anachronisms by the classes that once exalted them. My convent school batchmates' enduring love for those venerable red brick, colonnaded buildings is palpable but very few of their daughters went to the same school or indeed any churchrun institutions. Not only has our school's uniform changed to salwarkameez, but its alumni's priorities have also clearly shifted.

Missionary schools, at least in urban India, are now regarded as oldfashioned, although they do retain their charm in some cities. The upper-middle and upper class now want to put their children in international schools or 'new age' institutions. "Alternative" schools have also come up, offering more modern or 'indigenously rooted' edu cation, attracting some other middle and upper class subsets.

The most enthusiastic supporters of 'old-fashioned' Christian schools in my generation drew the line too when it came to choosing where their children would study. It never occurred to us to put our son in a missionary schooleither, though we are both alumniof Christian institutions! Except for a few 'iconic' church-run schools, the rest of the genre is losing ground, even when it comes to daughters.

The focus and priorities of many church-run schools in India have also shifted in the past few decades with many of them changing over to languages other than English as the medium of instruction even in the bigger cities. It is almost as if they are responding to the gradual erosion of their standing among the urban Indian elite that traditionally sent their children almost exclusively to missionary schools.

The unsavoury legacy of churchrun schools in western countries has made many Indian immigrants wary about placing their children in such institutions abroad despite having happily attended similar schools themselves back in India. Information about scandals and abuse in such schools in the west spreads fast around the world and will eventually impact perceptions in India too. A storm is gathering.

Perhaps that anticipated batch reunion will help reassess what a convent education actually meant to us—and means now. $\in \tau / \sqrt{5} / 0$

PIONEER (P-10), 16 JULY 2023

Studying Abroad? Take Care of Your Mental Health Studying in a foreign country offers unparalleled opportunities for personal growth, but it can also present unique mental health challenges. DR JYOTI KAPOOR says that by preparing thoroughly, prioritising self-care, embracing cultural adjustments, and building resilience, one can effectively navigate these challenges

Sexciting and enriching experience that offers numerous opportunities for personal and academic growth.

However, it can also present unique challenges to one's mental health. Being away from familiar support systems, adjusting to a new culture, and academic pressures can contribute to stress, anxiety, and homesickness. To ensure a successful and fulfilling study abroad journey, it is essential to prioritize mental well-being.

Here, we will explore practical strategies and tips on how to deal with mental health issues while studying abroad:

PREPARING FOR THE JOURNEY

A solid foundation is crucial for maintaining mental wellbeing while studying abroad. Start by conducting thorough research on the host country's culture, lifestyle, and potential challenges you may face.

This will help you to set a realistic expectations and make informed decisions.

Additionally, consider the following:

 Build a support network:
 Establish connections with local students, international student organizations, and study abroad advisors. They can offer support, guidance, and a sense of belonging.

Create and maintain communication: Stay in touch with family and friends back home. Regular communication can provide emotional support during challenging times and help combat homesickness. Learn coping skills: Familiarize yourself with stress management techniques such as meditation, deep breathing exercises, or journaling. These strategies can be invaluable during overwhelming moments.

PRIORITIZING SELF-CARE

Maintaining a healthy lifestyle and self-care routine are essential for mental well-being. While studying abroad, prioritize the following aspects of self-care:

 Physical well-being: Engage in regular exercise, maintain



a balanced diet, and get enough sleep. Physical activity not only boosts mood but also helps manage stress and anxiety.

- Time management: Establish a structured routine that allows for a healthy balance between academics, socializing, and personal time. Effective time management can reduce feelings of overwhelm and prevent burnout.
- Seek support when needed: Don't hesitate to reach out for help if you find yourself struggling. Many universitics have counseling services available to support international students. Utilize these resources to

address any mental health concerns.

EMBRACING CULTURAL ADJUSTMENT

One of the most significant challenges while studying abroad is adapting to a new culture. The following strategies can help ease the transition and promote mental well-being:

Open-mindedness:

- Approach the host country's culture with an open mind and a willingness to learn. Embrace differences and celebrate the unique experiences this new environment offers
- Establish routines and find familiar activities: Incorporate elements of your home culture into your daily routine. Engage in hobbies, sports, or join clubs that align with your interests. These activities can provide a sense of familiarity and comfort.
- Foster social connections: Engage with local students and other international students. Participate in cultural events, join language exchange programs, or volunteer. Building relation-



ships will help you feel more integrated and supported.

BUILDING RESILIENCE AND COPING STRATEGIES

Studying abroad may present unexpected challenges. Strengthening your resilience and developing effective coping strategies can help you navigate these hurdles:

- Embrace uncertainty: Accept that not everything will go as planned. Cultivating adaptability and resilience will help vou overcome obstacles and manage stress.
- Seek protessional help it needed. It you find yourselt

struggling with mental health issues, don't hesitate to seek professional support. Universities often offer counseling services that can provide guidance and assistance.

Practice self-compassion: Be kind to yourself and acknowledge that it is normal to experience ups and downs while studying abroad. Treat yourself with compassion, practice positive self-talk, and give yourself permission to make mistakes and learn from them.

(The author is hunder-director and serior psychiatrist, Manashali)

CUET system needs further refinement

he Common University Entrance Test for undergraduate courses (CUET-UG) was envisaged two years ago as a novel solution to the peculiar problem in Indian higher education of sky high cut-offs, triggered by a deluge of students across various state and central boards registering near-perfect scores. But as the results announced on Saturday show, this is definitely still a work in progress. This newspaper reported that the results showed an increase in students scoring in the 100th percentile. This year, 22,836 were in the topmost performance band, compared to 21,159 the previous year. A total of 1.1 million students took the test. The maximum number of 100th percentile scores were in English (5,685), followed by Biology (4,850), Economics (2,836), and Business Studies (2,357). Authorities should investigate whether this distribution reflects a shift in the profile of students doing well in CUET, as compared to the earlier decentralised board exam system.

There is little doubt that college admissions will see more intense competition this year, especially in the few elite institutions that represent the best shot at intergenerational mobility, thus are in greatest demand. Jostling for seats among students with superlative scores is a function of two intertwined factors — an unsophisticated examination system and the paucity of quality higher education options limited to a few elite universities. CUET was a firm first step to break this shackle, but its questioning and marking patterns may need further refinement. Ultimately, however, the problem will persist until India trains its focus on lifting the floor on higher education and seeds quality institutions across the country, not just in its metropolises.

Malicious intentions?



SHANTANU MUKHARJI

The Dutch government is concerned that sensitive knowledge may fall into the wrong hands, posing a risk to national security Dutch government's plan to bar Chinese students from pursuing certain 'sensitive' courses in the Netherlands further creates a dent in the already battered image of China

blow when a recent trend emerged regarding the consideration of forbidding Chinese students from pursuing studies, especially in European Union (EU) countries. The first shocking incident came from the government of the Netherlands, as the Dutch establishment revealed its plans to vet international students and banned some Chinese postgraduates from obtaining top technology degrees due to concerns about potential risks to national security. Dutch Education Minister Robbert Dijkgraaf disclosed that he was investigating the number of students funded by the state-run Chinese Scholarship Council (CSC) after several universities started excluding them. In China, recipients of Chinese grants are also required to swear allegiance to the Communist Party, return to China within two years of completing their studies, and report to the Chinese embassy in the country where they study. This demonstrates the tight control exercised by the Chinese government over their students.

hina suffered a major

This is the latest indication of a stricter stance taken by EU countries regarding security threats emanating from Beijing. Dijkgraaf further informed the media that he shared the concerns of universities, stating that the targeted use of grant programmes to obtain high-quality knowledge and technology for the state was undesirable. Meanwhile, a study has been initiated to determine the number of CSC researchers in the Netherlands and the academic fields in



Chinese government exercises tight control over its nationals studying abroad

which they are active. He also mentioned that he would report to the Parliament this year and was even preparing to legislate a Knowledge Security Screening Law. However, the minister added that there was no specific policy to exclude Chinese students or to discourage cooperation with Chinese institutes or researchers in sensitive fields. Nevertheless, this currently appears ambiguous.

Robbert-Jan Smits, President of Eindhoven University of Technology, stated that all Dutch universities will gradually reduce the number of students from China. In a related development, the Netherlands is also considering legislation to screen foreign students planning to study in technical fields, which raises security risks. Such a screening test would be the latest among several measures taken by universities and the government to limit Chinese students' access to Dutch technology. It is noteworthy that the Dutch intelligence agency AIVD

had warned in April that Dutch universities are an "attractive target" for spying, with China being the largest threat. Interestingly, the number of foreign students in the Netherlands has been growing in recent years, sparking a disagreement on whether the Dutch language should be mandatory in classes.

It should be emphasized that some Dutch universities continue to reject students and researchers from Iran and China solely based on their nationalities, despite the fact that excluding or screening individuals based on nationality is prohibited by law. The Dutch government is concerned that sensitive knowledge may fall into the wrong hands, posing a risk to national security. Consequently, universities exercise great caution when admitting Iranian and Chinese students and researchers. This cautionary approach aims to prevent the leakage of sensitive knowledge from highrisk fields such as nuclear and mussile technology. The Netherlands possesses valuable technical and scientific knowledge that other countries may have a keen interest in, claims Danny Pronk, a former employee of the Dutch intelligence services.

It is worth reiterating that such risks were significant in 1979, following the revelation that scientist AR Khan (of Pakistani origin) had stolen the blueprint for uranium enrichment and other technical know-how from the Netherlands. Khan utilized this stolen information to assist Pakistan in developing an atomic bomb and also facilitated the transfer or sale of this knowledge to North Korea, a rogue state.

It is also noteworthy that relations between China and the West have become increasingly strained in recent years. The Huawei affair of 2019 halted the deployment of 5G networks with Chinese assistance, TikTok has faced bans in many countries in recent months, and ASML technology is now being kept away from China. All three examples reflect significant concerns for Western countries, including the risk of information theft and apprehensions about espionage from Beijing.

Furthermore, the Dutch government has explicit concerns about China. The Security Strategy for the Kingdom of the Netherlands (PDF) identifies China, along with Russia. as a threat to national security. Consequently, it appears that the Dutch government seeks to take independent action regarding its China policy. The ban on ASML technology appears to have been partly influenced by pressure from the US, although this possibility cannot be entirely dismissed by China observers.

With that said, the Dutch government aims to prohibit Chinese students from enrolling in courses at Dutch universities that involve handling valuable and sensitive technology. The proposed legislation will likely be carefully worded to avoid explicitly targeting China, perhaps as a diplomatic move to avoid completely alienating the country.

Till things concretize on this vital subject, China's credibility has surely taken further beating. It raises questions about its intentions of spying and endangering the security of other countries, especially in Europe, as an apparent move to steal scientific and technological secrets. Using their students studying in advanced Western countries is perhaps an easy option for them

The writer is an IPS officer. Adviser NatStrat, security analyst and a former National Securaty Advisor in Mauritus

Views apresed are personal malin/7



CUET Good

The exam went much smoother this time. But much more reform potential remains to be filled

The CUET reform has come far since last year but still has a long way to go. To begin with the positives, traumatic and large-scale technical glitches were dramatically reduced. Next, where it stretched from July 15 to August 30 in 2022, in 2023 it wrapped up between May 21 and July 5. More impressively, by July 15 the result was out. The goal of once again beginning university classes in July is at least in sight now. Overall, better match-up between UGC and NTA's communications and students, teachers and schools, made for a pleasanter exam experience this time.

For 2024 though, UGC and NTA should target concluding the exam in May and notifying its schedule by end 2023 itself. This shall be helpful for the universities' admission cycle, but also for smoother exam delivery. An early notification would mean that



many of the state exams around which the CUET schedule has to manoeuvre, shall adjust to it instead. Second, while there are now 249 universities aboard CUET as compared to 90 last year, this is still less than one-fourth the total universities in the country. More universities' participation will also help NTA in meeting a third critical target, which is increasing the pool of suitable test centres.
Better quality control of the test

centres definitely contributed to cutting the painful technical snags. But the core problem of paucity of centres with computers of specific requirements continued to take a toll, including in multiple extensions of the exam. Student registrations that have already soared from around 10 lakh to around 15 lakh shall fly higher once again, if the CUET universe extends across say 350 universities next year. Remember also that as admirable a job as NTA has done with NEET, JEE etc, it is needed by many, many other exams. Year-round there are cheating scandals disrupting admission or recruitment pen-and-paper tests in different parts of the country. Switching to computer-based testing is the only way forward. Governments must prioritise this capacity expansion, which will be particularly transformative in mofussil areas.



Emily Riehl of Johns Hopkins University, US, who has experimented with a proof assistant program, finds the gamification addictive

n the collection of the Getty museum in Los Angeles, US, is a portrait from the 17th century of the ancient Greek mathematician Euclid: dishevelled, holding up sheets of *Elements*, his treatise on geometry, with grimy hands.

For more than 2,000 years, Euclid's text was the paradigm of mathematical argumentation and reasoning. "Euclid famously starts with 'definitions' that are almost poetic," Jeremy Avigad, a logician at Carnegie Mellon University, US, said. "He then built the mathematics of the time on top of that, proving things in such a way that each suc-cessive step 'clearly follows' from previous ones, using the basic notions, definitions and prior theorems. There were complaints that some of Euclid's "obvious" steps were less than obvious, Avigad said, yet the system worked.

But by the 20th century. mathematicians were no longer willing to ground mathematics in this intuitive geometric foundation. Instead they developed formal systems - precise symbolic representations, mechanical rules. Eventually, this formalisation allowed mathematics to be translated into computer code. In 1976, the four-colour theorem - which states that four colours are sufficient to fill a map so that no two adjacent regions are the same colour - became the first major theorem proved with the help of computational brute force. Now mathematicians are grappling with the latest transformative force — arti-

ficial intelligence. In 2019, Christian Szegedy, a computer scientist formerly at Google and now at a start-up in the Bay Area, US, predicted that a computer system would match or exceed the problem-solving ability of the best human mathematicians within a decade. Last year, he revised the target date to 2026.

Akshay Venkatesh, a mathematician at the Institute for Advanced Study in Princeton, US, and a winner of the Fields Medal in 2018, isn't currently interested in using AI, but he is keen on talking about it. "I want my students to realise that the field they're in is going to change a lot," he said in an interview last year. He recently added by email: "I am not opposed to thoughtful and deliberate use of technology to support our human understanding. But I strongly believe that mindfulness about the way we use it is essential."

In February, Avigad attended a workshop about "machine-assisted proofs" at the Institute for Pure and Applied Mathematics on the UCLA campus in the US. The gathering drew an atypical mix of mathematicians and computer scientists.

"It feels consequential," said Terence Tao, a mathematician at the university, who is also winner of a Fields Medal in 2006 and the workshop's lead organiser.

Tao noted that only in the past couple of years have mathematicians started worrying about Al's potential threats, whether to mathematical aesthetics or to themselves. That prominent community members are now broaching the issues and exploring the potential "kind of breaks the taboo," he said.

One conspicuous workshop attendee sat in the front row: a trapezoidal box named "raise-hand robot" that emitted a mechanical murmur and lifted its hand

Only in the past couple of years have mathematicians started worrying about AI's potential threats, whether to mathematical aesthetics or to themselves

whenever an online participant had a question. "It helps if robots are cute and nonthreatening," Tao said.

These days there is no shortage of gadgetry for optimising our lives — diet, sleep, exercise. "We like to attach stuff to ourselves to make it a little easier to get things right." Jordan Ellenberg, a mathematician at the University of Wisconsin-Madison, US, said during a workshop break. AI gadgetry might do the same for mathematics, he added: "It's very clear that the question is, What can machines do for us, not what will machines do to us."

One maths gadget is called a proof assistant, or interactive theorem prover. ("Automath" was an early incarnation in the 1960s.) Step-by-step, a mathematician translates a proof into code: then a software program checks whether the reasoning is correct. Verifications accumulate in a library, a dynamic canonical reference that others can consult. This type of formalisation provides a foundation for mathematics today, said Avigad, the director of the Hoskinson Center for Formal Mathematics (funded by crypto entrepreneur Charles Hoskinson), "in just the same way that Euclid was trying to codify and provide a foundation for the mathematics of his time.

Of late, the open-source proof assistant system Lean is attracting attention. Developed at Microsoft by Leonardo de Moura, a computer scientist now with Amazon, Lean uses automated reasoning, which is powered by what is known as good old-fashioned artificial intelligence, or GOFAI - symbolic AI, inspired by logic. So far the Lean community has verified an intriguing theorem about turning a sphere inside out as well as a pivotal theorem in a scheme for unifving mathematical realms.

among other gambits.

But a proof assistant also has drawbacks. It often complains that it does not understand the definitions, axioms or reasoning steps entered by the mathematician, and for this it has been called a "proof whiner". All that whining can make research cumbersome.

But Heather Macbeth, a mathematician at Fordham University, said that this same feature — providing line-by-line feedback — also makes the systems useful for teaching.

In the spring, Macbeth designed a "bilingual" course: she translated every problem presented on the blackboard into Lean code in the lecture notes, and students submitted solutions to homework problems both in Lean and prose. "It gave them confidence," Macbeth said, because they received instant feedback on when the proof was finished and whether each step along the way was right or wrong.

Since attending the workshop, Emily Riehl, a mathematician at Johns Hopkins University, US, used an experimental proof-assistant program to formalise proofs she had previously published with a co-author. By the end of a verification, she said, "I'm really, really deep into understanding the proof, way deeper than I've ever understood before. I'm thinking so clearly that I can explain it to a really dumb computer.





नैशनल टेस्टिंग एजेंसी (NTA) की ओर से जारी CUET-UG रिजल्ट ने स्टूडेंट्स को जितनी राहत दी है, उससे ज्यादा सवाल खड़े किए हैं। वैसे यह अच्छी बात है कि पिछली बार के मुकाबले इस बार CUET परीक्षाएं ज्यादा व्यवस्थित ढंग से ली गईं और रिजल्ट भी समय पर घोषित कर दिया गया। यह बात इस तथ्य की रोशनी में और महत्वपूर्ण हो जाती है कि CUET देश की दूसरी सबसे बड़ी परीक्षा बन चुकी है। मेडिकल के

लिए होने वाले एंट्रेंस टेस्ट NEET में करीब 20 लाख स्टूडेंट्स शामिल हुए थे, जबकि CUET के लिए इस साल करीब 15 लाख रजिस्ट्रेशन हुए थे और 11 लाख से ज्यादा स्टूडेंट्स इसमें शामिल हुए। पिछले साल की इसी परीक्षा के मुकाबले देखा जाए तो रजिस्ट्रेशन में अच्छी बढ़ोतरी बताई जा रही है। 2022-23 में यानी CUET परीक्षा के पहले साल करीब 12.5 लाख स्टूडेंट्स ने रजिस्ट्रेशन कराया था, जबकि 9.9 लाख स्टूडेंट्स परीक्षा



CUET 2023-24 के नतीजे

में शामिल हुए थे। साफ है कि परीक्षा के प्रबंधन का जहाँ तक सवाल है, NTA की संराहना होनी चाहिए। लेकिन एक अहम सवाल इस पूरी कवायद की सार्थकता का भी है। इस लिहाज से देखें तो टॉपर स्टूडेंट्स की अप्रत्याशित रूप से बढ़ती संख्या कुछ सवाल खड़े करती है। पिछले साल भी 100 परसेंटाइल वाले स्टूडेंट्स की संख्या (21,159) कम नहीं थी। लेकिन इस बार यह और बढ़कर 22,836 पर पहुंच गई। यानी टॉप के संस्थानों में एडमिशन की रेस इस बार भी टफ होगी। हालांकि एक प्लस पॉइंट इस बार यह है कि CUET की भागीदारी वाली यूनिवर्सिटी की संख्या पिछली बार (90) के मुकाबले काफी अधिक (250) है। इसलिए स्टूडेंट्स के पास ऑप्शन ज्यादा होंगे। लेकिन अगर टॉप के 20-25 संस्थानों की बात करें, जहां ज्यादातर स्टूडेंट्स पढ़ना चाहते हैं तो सीन शायद बदला हुआ न दिखे। याद किया जा सकता है कि CUET सिस्टम से पहले कॉलेजों और संस्थानों की हाई कटऑफ लाइन स्टूडेंट्स और पैरंट्स के तनाव की एक बड़ी वजह बनी रहती थी। कई संस्थान तो 100 परसेंट कटऑफ घोषित करने लगे थे, जिसका मतलब यह था कि सौ फीसदी से कम नंबर लाने वाले स्टूडेंट्स वहां एडमिशन नहीं पाएंगे। इसी मुश्किल को दूर करने के मकसद से CUET परीक्षा का सिस्टम शुरू किया गया। जाहिर है, इस सिस्टम में और सुधार की जरूरत है। अच्छी बात यह है कि सुधार की प्रक्रिया को बंद नहीं किया गया है। इस पर काम लगातार चल रहा है। यूजीसी के मुताबिक इंजीनियरिंग और मेडिकल कोसौं की तर्ज पर इसमें भी कॉमन काउंसिलिंग शुरू करने पर गंभीरता से विचार हो रहा है। उम्मीद की जाए कि आने वाले वर्षों में वाजिब सुधारों की बदौलत उच्च शिक्षा के लिए एडमिशन पाने की प्रक्रिया सहज, सुसंगत और तनावरहित बना ली जाएगी।

HINDUSTAN TIMES, (P-16), 18 JULY 2023

NRF is a game changer. But it needs more clarity

he National Research Foundation (NRF) is India's largest government programme to fund research till date. India's gross expenditure on research and development (GERD) is currently 0.6-0.8% of the Gross Domestic Product (GDP), quite low when compared with that of the United States (US) (3.36%), China (2.14%), and Israel (4.9%). A significant infusion of funding, steered by a clear implementation strategy, is required for India to become a science leader. The NRF bill is an excellent start to driving India's research agenda but it needs to clarify its objectives and create capacity for their achievement.

First, driving outstanding research is currently possible by expanding the funding pool for those working in well-equipped laboratories. However, our universities and colleges

are not well-endowed with such amenities. This is evident from the fact that the higher education sector contributes just about 7% to India's total research and development (R&D) expenditure. This is significantly lower than Australia (31%), Mexico (27%), France (21%), Germany (17%), and the US (13%). In many countries, a significant share of basic research is undertaken by the universities. Not so in India. In 2017-2018, 93% of all R&D expenditure by the Union government came from major scientific agencies. Furthermore, the Science and Engineering Research Board (SERB)- set up by an act of Parliament — funds work only in a handful of premier institutions such as the Indian Institute of Science or the Tata Institute

of Fundamental Research. This disparity in research funding robs undergraduate and postgraduate students in state and central universities of opportunities. As the overarching goal of NRF is to enable a culture of research in our universities, it must be structured in a way that current disparities in research funding are addressed.

Second, India's share of public and private contribution to GERD is significantly skewed when compared to other countries; 52% of GERD in India is by the government which is substantially higher than in the US (10%), Germany (13%), China (15%), and even Russia (30%) and Mexico (36%). Conversely, India's GERD by private enterprise is at 41%, which is much lower than in South Korea (79%), China (78%), the US (73%), the UK (68%), and France (65%). In many countries, business enterprises invest in conducting experimental and applied research, rather than basic research. As ₹36,000 crore of the ₹50,000 crore outlay is expected to come from the private sector, a clear road map on raising this money will be crucial.

NRF can be a viable tool to address challenges to India's research and development capacity. For example, a share of the funds should be targeted towards building scientific research capacity in universities and semi-urban areas. There is a need for capital investment to build research laboratories in academic institutions that offer undergraduate and postgraduate degrees. Public funds must be used to this end.

But it will need more clarity on two counts. At the outset, the government should clarify whether NRF is meant exclusively for science

research, or will it encompass allied fields and even humanities. The department of science and technology (DST) is likely to administer NRF, reports suggest, indicating that science will get priority, even though the National Education Policy (NEP), 2020 envisages NRF as a mechanism to "fund outstanding peer-reviewed research and to actively seed research in universities and colleges" — with no mention of it catering exclusively to science.

And, reports suggest that NRF is likely to integrate R&D funds available with all ministries. In addition, the NRF Bill is likely to subsume the existing SERB Act, 2008. The subsuming of existing funding mechanisms implies that there might be limited availability of additional

funds over and above the current commitments. If true, this could be a cause for concern.

NRF is a long-awaited reform that is expected to streamline the research and development ecosystem in the country and enhance India's capacity to innovate. The proposed body should focus its public funding component on promoting basic research and uplifting institutional capacities, while taking steps to increase the share of private funding that can be more targeted towards promoting experimental and applied research. With a structured implementation, NRF can be a major game changer for Indian science.

Saurabh Todi and Shambhavi Naik are researchers at the Takshashila Institution. The views expressed are personal





INDIAN EXPRESS (P-10), 18 JULY 2023

To the moon and back



Success of Chandrayaan-3 will tell the young it's possible to do quality research, make a difference on Indian soil

SOMAK RAYCHAUDHURY

CHANDRAYAAN-3 IS NOW well on its way to the moon. The spacecraft is in an elliptical orbit, going as far as 41,762 km from Earth and coming as close as 173 km. This height will increase to about 220 km in the next few days, and it will conduct various tests and calibrations before it is transferred, free from the Earth, to be captured in orbit around the moon (translunar injection) a few days later. This orbit will gradually shrink, bringing the spacecraft closer and closer to the moon. Finally, it will attempt a soft landing at a location near the south pole of the moon, from a circular orbit of about 100 km from the surface.

Even though everyone is focused on the final procedure of the soft landing, it is the journey before that is fraught with difficulties, much like Ulysses' path to Ithaca. All of that will keep us on tenterhooks till August 23. Anybody who wanted to, saw for the first time, on community screens, television sets and mobile phones, the process of a launch in great detail. In the first hair-raising period of 1,000 seconds, everything went as expected. The liquid core ignited, which took the spacecraft to a higher orbit. Finally, the novel cryogenic engine, which used solid hydrogen and oxygen at temperatures of -200 degree Celsius, propelled the spacecraft to a higher orbit, before the satellite separated.

There were cheers from thousands of school kids at Sriharikota, which echoed across school grounds, marketplaces and households. This is what made this launch different. Since the pandemic, access to digital media, online discussions and news dissemination has become widespread.

In 1957, as the Russians launched Sputnik, Vikram Sarabhai, who laid the groundwork for India's space programme, leading to the establishment of the Indian Space Research Organisation (ISRO), said: "There are some who question the relevance of space activities in a developing nation. To us, there is no ambiguity of purpose. We do not have the fantasy of competing with economically advanced nations in the exploration of the moon or the planets or manned space flight. But we are convinced that if we are to play a meaningul role nationally, and in the community of nations, we must be second to none in the application of advanced technologies to the real As an astrophysicist, I am very excited by the expected scientific outcomes of this project. The moon and Earth were formed at the same time from the same materials. Understanding the formation and composition of the moon will go a long way in understanding how our planet was formed. Of the three countries that have successfully landed either humans or instruments on the moon (the US, erstwhile USSR, China), none has ventured far into its southern hemisphere. The lander will land at a latitude of 70 degrees south, pretty close to the south pole. Why is this momentous?

problems of man and society."

Chandravaan-3 is a major step forward in India's lunar exploration programme, and it is sure to make significant contributions to our understanding of the moon. Perhaps more importantly, it will showcase India's capabilities and build its reputation in the global space community, which will help attract more investment in the industry. One is painfully aware that the private sector in India, despite being capable, is engaged in only a fraction of the space enterprise in the international industrial sector, currently valued at about \$500 billion. This must change, and Indian industry must become a major global player. The government's newly-unveiled Space Policy 2023 states that India's space programme should "enable, encourage and develop a flourishing commercial presence in space".

This is the first time that India has partnered with the private sector on a major space mission. The lander and rover that will be deployed on the moon were developed by a consortium of Indian companies in collaboration with ISRO laboratories. The ground control systems were also developed by ISRO with the help of industry, and much of the mission's data will be processed and analysed by the private sector.

India is now a signatory to the Artemis Accords, an agreement with the other leading space agencies — NASA (US), ESA (Europe), JAXA(Japan) and the CSA(Canada) — for moon exploration with a view to colonise it. If Chandrayaan-3 can lead the way, future Artemis astronauts, based on ISRO's pioneering work, will be able to collect core samples and volatiles from these regions. This could have a profound impact on deep space exploration and eventual commercial activities.

India's scientists are now taking part in a few frontline worldwide projects that are pushing technological boundaries. India has dealt with hardware and software challenges in the Thirty Meter Telescope project, in collaborations at the Large Hadron Collider at CERN, and in the preliminary stages of the recently-approved Laser Interferometer Gravitational-Wave Observatory in India (LIGO-India) and the Square Kilometre Array in radio astronomy. The technological achievements in the astrophysics and space sectors are now for the world to see.

As an astrophysicist, I am excited by the expected scientific outcomes of this project. The moon and Earth were formed at the same time from the same materials. Understanding the formation and composition of the moon will go a long way in understanding how our planet was formed. Of the three countries that have successfully landed either humans or instruments on the moon (the US, erstwhile USSR, China), none has ventured far into its southern hemisphere. The lander will and at a latitude of 70 degrees south, pretty close to the south pole. Why is this momentous?

There are many geographical variations on the moon's surface, and many are worth exploring. The southern hemisphere has high mountains, and deep craters, which are more extreme in nature than in the north. These block sunlight, and so, there are large permanently shadowed regions near the poles, where temperatures can go down to -200 degrees Celsius. These are home to volatiles chemical elements or compounds that melt or vapourise at moderately warm temperatures. This includes water, which, we suspect, exists in large quantities in supercooled ice form. These volatiles could provide valuable insights into the history of the solar system.

People often ask me whether a poor country like India can afford to spend Rs 600 crore on a mission to the moon. The amount is less than the budget of some major movies and one-fifth the price of a single Boeing-747 aircraft. It's not so expensive, and it opens up collateral possibilities for the country and local industry to earn far more in associated projects.

Missions such as Chandrayaan-3 will inspire the next generation of scientists and engineers. It was so wonderful to see the beaming faces of the youngsters at the launch, at our campus, and on the streets. The success of Chandrayaan-3 will send a message to young people that it is possible to do quality scientific research, and make a difference, here, on Indian soil.

It is hard to put a price tag on that.

The writer is an astrophysicist and Vice-Chancellor, Ashoka University, Haryana, and was Director, IUCAA, Pune. Views are personal

STATESMAN (P-11), 18 JULY 2023

How EdTech can bridge educational disparities

MAYANK SINGH

n the connected world of today, education is crucial in determining how people and communities will develop in the future. However, a number of educational gaps continue to exist, preventing everyone from having equal access to highquality learning opportunities. These differences worsen already-existing socioeconomic inequities because they disproportionately harm vulnerable communities. We must use educational technology (EdTech) to close the equity gap and guarantee that every learner has an equal opportunity of success in order to address this urgent issue.

WORKING AROUND GEOGRAPHICAL BARRIERS

Overcoming geographic barriers is one of the biggest obstacles to achieving educational parity. There is frequently a shortage of access to top-notch educational resources, qualified teachers, and up-todate curricula in remote and neglected locations. By offering online learning platforms, virtual classrooms, and digital resources, edtech has the ability to remove these barriers. Through EdTech, students from isolated locations can gain access to top-notch instruction, interact with interactive materials, and communicate with knowledgeable teachers from around the globe.

ADAPTING EDUCATIONAL EXPERIENCES:

Every student has different learning styles, skills, and shortcomings. These distinctions are frequently difficult for traditional educational systems to take into account, leading to a one-size-fits-all approach that leaves many pupils behind. EdTech offers individualised learning opportunities that are tailored to each student's needs, allowing them to advance at their own speed and delve deeper into their areas of interest. In order to provide students with individualised support and interventions, educators can identify students' strengths and weaknesses with the aid of adaptive learning algorithms, intelligent



tutoring systems, and data-driven insights,

LANGUAGE AND CULTURAL DIVERSITY ISSUES:

Language and cultural obstacles might impede productive learning experiences in different educational environments. Innovative solutions to these problems are provided by edtech. Students can overcome language obstacles and promote inclusive participation with the use of language learning apps, translation resources, and interactive multimedia content. A sense of belonging and improved cultural understanding can be fostered among students from all backgrounds by including diverse perspectives, experiences, and representation in culturally responsive EdTech platforms.

FOSTERING 21ST-CENTURY SKILLS AND DIGITAL LITERACY:

Technology competence and digital literacy are essential for future success in a world that is becoming more and more digital. Students are given the tools they need through EdTech to successfully communicate, navigate the digital world, and assess information critically. Teachers may foster 21st-century abilities like problem-solving, cooperation, creativity, and digital citizenship by incorporating technology into the curriculum. These abilities are crucial for future employment opportunities as well as academic performance, ensuring that students are ready for the demands of the modern workforce.

BOOSTING PROFESSIONAL DEVELOPMENT AND TEACHER EMPOWERMENT:

EdTech helps kids, but it also gives teachers the tools they need to provide engaging lessons and advance their professional practises. Teachers may access a multitude of information, discuss best practises, and participate in continuous learning thanks to online learning platforms, professional development programmes, and virtual collaboration tools. Teachers may monitor student achievement, pinpoint areas for growth, and modify their curriculum by using data analytics and insights from edtech. EdTech improves the broader educational environment and raises the standard of instruction for all students by assisting teachers.

To Conclude, A challenging problem requiring creative answers is closing the equity gap in education. EdTech offers a once-inalifetime potential to improve education by facilitating fair access, individualised instruction, and cultural inclusivity. We can empower students from all backgrounds and ensure that access to education is not limited by socioeconomic status or geographic location by leveraging the power of technology. A more fair and inclusive educational environment for all will depend on our continued investment in and use of EdTech as we navigate the future of education.

The author is co-founder of Campus 365

STATESMAN (P-11), 18 JULY 2023 Army ethos guides students at city's management institute

he Army Institute of Management, Kolkata is one of the leading management schools in India. Established on 28 July, 1997 by the Army Welfare Education Society (AWES), New Delhi, the institute is the first of its kind in India. It has, along with other vocational institutes under the aegis of the AWES. made quality management education available at affordable cost to the wards of Army personnel. Students from general category (20per cent) can also apply here.

The Institute's MBA programme is approved by the All India Council for Technical Education (AICTE) and affiliated to the Maulana Abul Kalam Azad University of Technology, West Bengal.

Students are inducted through CAT exam. The institute houses 240 students from two batches at a time.

The Army fraternity at AIMK has created a unique-proven model for shaping next-gen business leaders. The business schools, under the aegis of the Indian Army, follow an adapted version from the military academy, the way Gentlemen Officers are being trained and groomed. Leading the institute through example is the director, Maj Gen VS Ranade (Retd).

The B-School has been in operation for 25+ years, which has seen 100 per cent placement rate, with students who are placed in top institutions such as Bajaj Finserv, Bajaj Allianz, Jio, ICICI Etc. For the 2023 batch, the highest CTC stands at Rs 15 lakh per annum and the complete 2-year MBA programme batch is placed through campus. 2000+ alumni are working in leading positions worldwide, informed Prof. Tamojit Ghosh Roy, head of corporate relations and placements.

The AIMK follows a strong industry-academia collaboration to bridge the skill gap. It recently signed MoU with Procam Logistics to set up the Procam Centre of Excellence in logistics & supply chain management at AIMK

There is also faculty exchange programmes with leading B-Schools enabling multi-disciplinary learning. Several scholarships for Army and non-Army background students, including the TATA Merit Scholarship, Army Commanders Scholarships, and the Sena Shiksha Scholarship Scheme (S3 Scheme) are available, informed the director.

The state-of-the-art campus, hostel



facilities forms one of the backbone of the six-acre residential institute. The classrooms are tech-enabled. The six verticals taught here are marketing, operations, business analytics, HR, finance and MIS. The library stocks around 14,000 books and uses EBSCO software where the students can subscribe for e-books

and e-journals through their mobiles. There is also a mini-library at the hostel, which houses books on fiction and nontext books. They also have their tie-up with the British Council Library. The computer library has 120 computers for the students.

With the Army brass, where josh is

always high among the students, Maj Gen Ranade leads the institute will a mission to create disciplined corbo-

We imbibe the Army ethos that makes us tick. The Army-connect, discipline, commitment towards the job are the qualities the industry is looking for. The students are not afraid to get their hands dirty at the institute. We teach them about the skills and soft skills, which puts them apart. With the ability to take in the load and be tenacious, the students are always ahead of others. Students learn here though conferences, seminars, guest lectures by industry captains for all the six verticals. There is lot of stress laid on nonacademic values like time management, personality development, decision-making, team management and team-building. We believe there is so much to learn outside the class."

In a long career in the Army of over three-and-a-half decades, Maj Gen Ranade had also a member of two counter-terrorist forces, The Assam Rifles and Rashtriya Rifles, apart from being the IG operations for the National Security Guards (NSG) and now he is channelling all his expertise at the institute. stal

LEARNING CURVE

Nina Mukherji on why more and more engineering graduates continue to feel the need to join a management programme at some point

ach year, approximately 1.5 million engineers enter the job market, but only 20 per cent are successful in securing relevant employment. Others end up in jobs that do not use their technical skills and training or no job at all. A recent report by Niti Ayog showed that 48 per cent do not find jobs. How can these graduates make themselves employable?

For several years now, engineers have gone on to join MBA programmes for precisely this reason. And it is safe to say that that trend has not gotten outdated.

Engineering graduates have a definite advantage when applying to MBA programmes. Their training prepares them to do well in entrance exams like the CAT. XAT and NMAT. According to Ajey Mehta, managing director of Trustonic India and an alumnus of ITT-Madras and IIM-Calcutta, "When I was at IIM-C in the mid-nineties, 85 per cent of my batchmates were engineers. Many of us went in for management degrees as there weren't many great core engineering jobs available then in India. However, nowadays, engineering graduates have more opportunities and are being hired by firms such as Infosys, Wipro, Amazon, Google and even by some big banks as analysts." Nikith Subramaniam,

Nikith Subrahaluani, who is in his final year at the Manipal Institute of Technology in Bengaluru, intends to pursue an MBA and plans to take the CAT and GMAT exams. He says, "Doing an MBA will improve my job prospects and supplement the technical skills that

I have acquired. I've heard that management graduates get good starting salaries."

The average salary package for graduates of premier institutes such as the IIMs, XLRI, ISB and S.P. Jain range from Rs 30 to Rs 35 lakh per annum. The highest domestic and international offers usually range from Rs 70 lakh to 1.2 crore a year.

Consulting, IT, FMCG, pharma, banking and financial institutions are the biggest recruiters on MBA campuses. Management institutes publish placement reports providing information about employment statistics, salary data, alumni success stories, and networking opportunities on their websites.

Some individuals prefer to work for a few years before pursuing an MBA. This gives them practical experience and a better understanding of the concepts they will learn. It also helps them to define their career goals. Anil Biyani, for example, completed his BTech in computer science degree and worked as an incident specialist at Amazon for four years before deciding to return to his studies. An incident specialist handles and responds to security breaches, system failures and other emergencies, basically ensuring smooth operations and quick solutions. He enjoyed working with people and improving processes but knew

EDGE OF REASON

it was impossible to transition to that type of role from his current position. "It was the right time to take a break and pursue an MBA so I could upgrade my skills and shift to process improvement and training," he says.

However, not everyone wants to make a dramatic change or switch careers. Many are looking to pick up the pace of their professional development or gain access to more senior roles within their current organisation or industry. Some opt for executive MBA programmes as they offer the flexibility to continue working while pursuing further education. These programmes are now widely recognised and respected by industries.

Those pursuing an MBA can choose between a general management programme or specialise in human resources, finance, marketing, analytics, information tech.

Many are looking to pick up the pace of their professional development or gain access to more senior roles

> nology, or sustainability and environment. Entrepreneurship is another popular specialisation. Founders of many successful start-ups, including Sachin Bansal of Flipkart. Naveen Tiwart of InMobi, and Saugeev Bikh

of Naukri, have management degrees.

In addition to the academic component, incubator cells in business schools provide support and resources to help students develop their ideas into successful start-ups. Subhrangshu Sanval. CEO of IIM-Calcutta Innovation Park, says. "To be a successful entrepreneur. you need to possess a broad range of skills, including technical, financial, marketing and people skills, as you have to perform a variety of tasks in the early stages of your venture. We have supported around 1.000 startups in the last eight years by providing mentorship, funding, market connections and other resources to help individuals translate their ideas into successful ventures.

Pursuing an MBA can be beneficial for engineers looking to move into management or leadership roles, start their own businesses, or transition into a new field such as consulting or investment banking. It offers a broader business outlook as well as helps develop and hone finance, marketing, and strategy skills.

It is worth mentioning here that it is not necessary for all engineering graduates to obtain in MBA. For some focussing on acquiring specialised technical skills or oursuing advanced degrees in engineering may be more beneficial Ultimately the decision to oursue an MRA should disn with long term cureer goals and specific opportunities you want to pursue Research and networking can provide value able insights for making an informed decision teth

Poor substitute

SWAPNA GOPINATH

platforms I-enabled ChatGPT like and Google Bard prompt us to ask questions about their transformative role in education. The possibility of creating content, researched and indexed data, without the hard labour of researching through vast databases, makes it imperative to ask questions regarding the consequences of the pervasive-ness of such platforms. For students, using a simple Mi-crosoft Windows operating crosoft Windows operating system has itself altered the manner in which they write and revise, using options to check spellings and grammar, with reduced stress on the writing process. One can always ask if this has im-proved the quality of writing: the answer may not always be a positive one.

move towards As we with AI-enabled platforms the possibility of accessing and structuring redata searched material into written pieces, the concerns being raised are different and complex. ChatGPT poses relevant and timely questions for us: is ChatGPT a step towards the democratisation of of knowl-Are rigour edge systems? training in academic and writing forms of knowledge gate-keeping? Do ChatGPT and other bots offer themselves as equalising plat-forms and counter hegemonic knowledge systems? Or are they a neoliberal balm for the marginalised without any structural change?

In higher education, with its focus on outcome-based ChatGPT seems education, provide easy solutions. to But the question still arises as to the qualities the individual has cultivated through such a process of education. Neoliberal normative struc-tures reinstate the importures reinstate the impor-tance of outcome and, hence, academic success gets trans-lated as employability. In this framework, AI-enabled programmes become an easily available tool for students with access to such tools

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The question then arises concerning the stumbling blocks that prevent a student from accessing knowledge, be it in the classroom or in libraries, or on the web. An

Swapna Gopinath is Associate Professor, Symbiosis Institute of Media and Communication, Pune online bot is still not an easily accessible tool for the marginalised sections of society. This could be due to several reasons, such as geographical remoteness or economic Yet another backwardness. problem is the difficulty in academic comprehending Interdisciplinarity texts. might be one of the reasons for several students finding academic papers difficult to comprehend. ChatGPT can provide summaries of such texts but in the process of sifting content, there will be a loss of the essence of certain key ideas. In such summa-rising and paraphrasing of knowledge, the reader plays an active role, which is missing in this case. The critical thinking that is required in the process will be absent. hence, will Learning, be incomplete.

ChatGPT becoming a readily available tool for students might enable them to access more academic papers and, with brief summaries of complex texts, make it easier for them to comprehend these and use them in their essays. But will they be used to simplify the complex theories or will they be used unethically to write assignments and submit them without fear of being caught for plagiarism? The bots are programmed to identify such unethical acts; but the judicious use of such platforms remains a matter of worry.

we ponder of de-When we the possibility democratising education through bots, we also encounter concerns knowledge-forregarding and perpetration. mation Knowledge evolves through an organic process, as the outcome of thought patterns through reading, shaped reflecting and writing. The possibilities of errors and the decision to re-align one's ideological positions com-plete the journey a person undertakes in the world of epistemological formations. Can an AI-enabled platform, which creates content by skimming through existing content without the perceptive presence of a human mind, emerge as a critical substitute?

What we need to acknowledge is that AI tools like ChatGPT are here to stay. Educators need to evolve their pedagogies in order to provide a conducive environment for students to develop their critical acumen.

TRIBUNE. (P-7), 18 JULY 2023

Reality check for IITs in the educational framework



KA PADMANABHAN EX-DIRECTOR, IIT-KANPUR

NY news that puts the IITs in the dock becomes 'juicy' and the latest seems to be the extreme popularity of the computer science programme of IIT-Bombay. According to some, there could be a 'revolution' in the event of the programme being discontinued for a year. A common charge is that basic research in the IITs and other Indian universities is not done by the BTech students produced by the IITs. but by those who pass out of other institutions. Evidently, research cannot be the focus of undergraduate (UG) education. IITs never claimed that through the JEE, they identify youngsters with great creativity. One of the best definitions of the scope of the JEE could be: "Where the examiners pose long and tough questions so that no one can finish the exam within the time allotted and a fair ranking of the students becomes possible. It is an eliminatory exam - the only way open while dealing with large numbers."

Some studies have shown that there is no correlation

between the students' all-India ranks in the JEE and their performance in their careers. In addition, there are late developers. That is why GATE enables science graduates and late developers to move from science to engineering, if they so desire,

Due to brain drain, with the country providing limited opportunities, many IITians left India. Then, people asked why the Government of India should subsidise IIT education. The professors were criticised for being too theoretical. But the IITs braved the storm. Suddenly, the economy got liberalised.

The simultaneous blossoming of the IT industry in India and the emergence of many former IITians in the US as CEOs, CTOs and multimillionaires elevated the IITs in the eyes of the public and the IIT professors became 'the creators of multimillionaires'. This triumph of IT also allowed foreign companies to look at Indian manufacturing and other industrial sectors favourably. This second revolution has just begun.

Cracking the JEE became a life-or-death obsession. The media kept alive this madness. There are many descriptions of IITs -'human stud farms' that manufacture the creme de la crème of Indian intelligentsia; 'producers of cyber/techno coolies'; 'similar to the B-grade degree colleges of the USA'; 'the pro-



PROS & CONS: The shortage of high-quality faculty is a major challenge, stock PHOTO FOR REPRESENTATIONAL PURPOSE

ducers of the only brand name of post-Independence India'. An article titled 'The whiz kids of the IITs' in US magazine Businessweek said the impact of the IITs on the US economy was more than that of Harvard, Yale, MIT and some other institutions put together.

In 1999, consultancy company McKinsey presented a report to then Prime Minister AB Vaipavee, which talked of a shortage of a million software engineers worldwide and the opportunities for India. The Central Government took over the Regional Engineering Colleges, renamed them National Institutes of Technologies. revamped the svilabi, and modernised the teaching. To

Today's India has a lot to offer. The number of IITians leaving the country is on the decline: salaries have risen.

Titan said a few years ago that their franchise for an outlet in a major city was won by the owner of a coaching institute against stiff competition from moneybags. Such is the economic clout of the coaching institutes. In contrast, the emergence of some highquality private educational institutions - such as VIT. SRM, Sastra, Jio, Shiv Nadar University, etc - has given rise to the hope that what the governments were unable to resolve may be remedied by the market forces. The grip of the coaching institutes will likely weaken only when there are many institutions of high quality. I am hopeful about "staving back to restore India to her satisfy regional aspirations, rightful intellectual prowess". today there are 23 ITTs all over Today's India has a lot to India, with only five or six of

the new IITs reaching any-

where near the old five in aca-

demic standards. A shortage

of high-quality faculty is a

Due to paucity of funds, the

state governments allowed

setting up of private engineer-

ing colleges. The conditions

laid down by the All India

Council of Technical Educa-

tion (AICTE) were input-driv-

en, like the size of classrooms

and staff-student ratio. No

attention was paid to the out-

comes. The difference in the

major challenge.

COO of Tata Group company

offer. The number of IlTians leaving India is on the decline. Salaries across the board have risen and many Indian companies are internationally competitive. When I started my career in 1972. India's GDP (gross domestic product) was \$70 billion. Today, it is \$3.5 trillion and India is the world's fifthlargest economy. In a few years, it is expected to become the world's thirdlargest economy. Being a part of this phenomenal growth is a thrilling journey. Can such quality of these institutions an experience be compensatand the II'ls is huge. This has ed for by a few more dollars? led to the creation of a thriving The answer will depend on coaching industry. A former an individual's values.

Caste-based reservations have their pros and cons. Several studies have revealed that diversity in industrial units leads to greater creativity. By keeping out the 'creamy laver' and ensuring strict enforcement of academic criteria within the norms laid down by the government, the IITs are enforcing academic standards.

The popularity of disciplines is market-dependent. In the 1950s, civil engineering was the most popular (period of hydroelectric projects, fertiliser, steel plants, etc). During 1970-1990. mechanical, electrical, chemical and metallurgical engineering ruled the roost so that the industries could be fed with skilled manpower. Then the era of computer science and engineering commenced and continues.

To prevent the start of a revolution on the closure of the computer science programme at IIT-Bombay for a year, the IITs cannot do "lousy" teaching. But the reader may rest assured that in the unlikely event of the computer science programme shutting down for a year, the parents and students could first curse IIT-Bombay and then the government. Soon they will sit together and choose 50 disciplines from the courses on offer, frequently consulting their friends in the IIIs, and trudge towards the counselling halls on the allotted day!

DECCAN HEARLD (P-7), 19 JULY 2023

Learning for the future: Adapt pedagogies to the age of AI

ARVIND LODAVA & APARNA VINOD

The disruptive impact of AI on education has been extensively analysed by beek experts, including Harvard's Chris Dede, who raises a thought-provoking point: "If you educate people for what AI does well, you are just preparing them to lose to AI" In line with this observation, this article advocates advocates for the adoption n1 innovative pedagogical approaches that respond to the evolving educational landscape influenced by AI.

The key takeaways from the foundational course 'Learning to Learn', which was designed by the writers and taught at their university, are the adoption, improvement, and modification of learner-centric and science-backed pedagogies. Inspired by Constructivism, a learning philosophy supported by leading thinkers such as Maria Montesson, John Dewey, and Jean Priaget, Paulo Freire, Humberto Maturana, and Seymour Papert, the pedagogical approaches prioritise activelearning through direct experience rather than passive imformation consumption. Constructivism emphasises exploration and play, and its influence can be seen in progressive learning approaches like Active Inquiry, Hands-On Learning, Social Learning, Learning-By-Doing, Project/Problem-Based Learning, and Challenge-Based Learning, to mention a few.

Shifting the focus to learners

The traditional "push"-based education model, where educators solely determine the curriculum, is no longer effective. Employers, parents, and learners themselves now play a more significant role in shaping educational content. This shift transforms learning from a "sole proprietorship" into a collaborative, adaptive, and evolving agenda-a "cooperative endeavour" ecosystem. Learners become central and take control of their education.

Empowering learners as owners and drivers of their education does not imply pandering to oppulism or consumerism, as some fear. However, with information readily available in various formats, the educator's job changes from passing on information to curating learning journeys that enable learners to find credible sources, make cross-connections, and inspire new ideas and creativity. As simple cognitive tasks are increasingly being performed more efficiently by machines, teaching should aim to foster metacognition -the higher order cognitive process and ability.

Diversifying Pedagogy

The rich diversity of content and formats available online, coupled with powerful generative AI tools, allows for tailoring learning to individual minds and personalities. While harbouring suspicion against these new technologies is reasonable, the immediate and massive adoption of ChatGPT to write assignments and even examinations is already a phenomenon. Educators must not remain blind to their potential to diversify and customise learning. For too long, we have treated students as one gigantic monolithic demographic persona and not diversified our classroom as well as assessment strategies to do justice to learner diversity and untapped individual potential.

We all know the consequences of having to memorise dates, events, and dynasties when learning history. We also know the actual thrill and awe we experience when actually visiting a neolithic site or historic

battleground. This is a simple illustration of how providing context to content completcly transformsour learning experience and turns us into avid seekers of knowledge (yes, knowledge can be addictive!)—and this principle applies to nearly every subject. Once we successfully establish vivid and relatable contexts for the subject being taught, students pretty much turn into self-driven learners. Context answers the perennial question asked by sulky learners: "Why do I have to learn this?"

Education move away from regurgitatingsiloedinformation to integrating knowledge off/rom various disciplines. Joining the dots in order to analyse and synthesise new ideas and solutions to real or future-world scenarios and challenges bringsknowledge demonstration and applicability to the fore. Keeping knowledge in separate boxes rendersit virtually useless and abstract. Posing open-ended provocations rather than inter-

rogating the learner's spot knowledge and computational ability, allows the learner to draw on the various, trans-disciplinary facets of their learning and demonstrate their integrated understanding.

For learner-centric approaches to work

how we evaluate and grade students must change radically. Until date, testing is based on recall, and emphasises on memorising a collection of important parts and manipulating them to solve issues or develop hypotheses. This may have been acceptable in the pre-internet age (it was not), but it makes no sense now. Evaluation should incorporate integrative and generative understanding, that is, developing a grasp of the key patterns underlying or informing diverse disciplines and applying this understanding to research and solve real-world situations or create new knowledge. Varied modalities by which learners can demonstrate such understanding can become valid forms of assessment-a viva presentation, an artefact embodying the information learned, a visual record of their journey, or even a real-world initiative undertaken in the field.

Shfting from Power to Partnership

The final and perhaps most challenging change that constructivist pedagogy requires is for the educator to abdicate the authority position or role in the classroom, despite their enormous scholarship and

expertise in the domain. With the arrival of the internet and autonomy, new-age learners must be equipped to reference multiple sources of authority (even challenge some of these) and formulate their own positionalities and narratives, facilitated byeducators. The new educator must cultivate and nurture learners' appetites for learning and teach them to process it critically and rigorously from their own standpoint rather than merely replicating that of somebody else.

The goal of education must be integrative, and the fundamental pedagogy must provoke, challenge, and affirm learners to discover, experiment, and test new ideas. The NEP 2020 provides hints and nudges in this direction that remain unexplored and under-utilised. This has left considerable ambiguity and reduced the power of its suggestions to tokenism. In closing, we hope that our policymakers push harder for progress and change and bring our education system in tune with evolving and new realities. (The writers are designers and teach at the School of Liberal Arts and Design Studies. Vidvashilp University)

PIONEER (P-6), 19 JULY 2023

The slurred aspects of education & training

VINAYSHIL GAUTAM

Education policies have to be periodically evaluated and upgraded to meet the newer challenges that life throws at individuals

All living creatures have a system for bringing up the next generation. This pattern covers everything from flying creatures to those that work on land and water. All creatures have a 'brain,' which helps them sense the environment and send signals to the body for self-perpetuation. This truth is almost commonplace. Typically, the four-legged animal picks up a newborn, even if it is picked up by mouth, and teaches the offspring how to walk. The birds are known to push the newly born appropriately from the nest and force it to take wings. This is the law of nature

When it comes to mammals, there are certain actions that are voluntary, like eating, defecating, avoiding excessive heat to prevent burns; or snuggling in warmth when it is chilly. Swallowing and eating are actions that can be considered voluntary. Put simply, beyond these involuntary actions, learning and teaching are basic to life. The homosapiens are no exception. Because of the life span of the homo sapiens, the basic learning and teaching period takes a longer period of time and indeed has domain-specific knowledge challenges. The period of formal learning can vary.

More to the purpose of this text is the basic realisation that, like much else, the processes by which homo sapiens grow are more structured. As learning passes from one generation to another, presumably, it becomes more sophisticated, advanced, and more structured

In the case of many creatures including homo sapien learning could extend well over several years. Such a span of time requires phasing, sequencing, and plan-ning of the learning processes. Formally, as in the case of homo sapiens, this covers school education, post-school education, and post-graduate education. The bald truth is that there is a suitable amount of literature available for schooling till the age of 16 and even beyond. When college and university education begins, the nature of teaching-training changes. The parents have differ ent approaches to managing them. In some cases, after the age



of 16, the parent allows a fair degree of freedom to the learner to choose not only the learning content and streaming but also the method. As many know, the age sequence of 17, 18, and 19 is a delicate one, and individuals in that period can get confused or choose the pre-sixteen kind of learning behaviour. The opposite may happen, and the individual at age 16 may become totally counter-dependent. This kind of collective experience may vary from region to region.

Be that as it may, it is important to understand that irrespective of the region, ideology, and more, the post-16 period in its various incarnation is central to any design of overall learning and teaching. The learning methods have to do with the extent amount of freedom and guidance that one individual may be amenable to.

In the post-16 years phase, there is a heavy emphasis on knowledge gathering. From the age of 11 onwards, the individual has to start exercising judgement on which stream of learning to choose and how to choose.

Reference has been made earlier to an individual's ability to acquire and internalised learning. This is a phase where general hfe lessons have also to be learnt. It may not all be in



THE LEARNING METHODS HAVE TO DO WITH THE EXTENT AMOUNT OF FREEDOM AND GUIDANCE THAT ONE INDIVIDUAL MAY BE AMENABLE TO

a classroom. Excessively distorted childhood, characterised by verbal pounding, by elders, may have inculcated in the individual an orientation towards "feeling accused" when there may be no reason to get emotional about an error committed or indeed an error being pointed out. This feeling of being accused can be a fallout, as mentioned earlier, of earlier childhood experiences of traumatised correction. Even excessive tonguelashing in early childhood can create this effect. Such aberrations are difficult to correct and can damage adult relationships between individuals.

Other examples of impacted personality can be cited. The more important thing is to integrate the mental background of a person with the inputs provided in the growth phases of the individual. There would also be a need to structure the mind for a sensitive and positive approach to inputs for coming into adulthood.Similarly, an individual can simply develop the aberration of misunderstanding a statement or a situation without enough thought. This distortion of interpretation doesn't make the person a fit psychiatric case. However, it does make out a certain case for constructive association with the individual so that he continues to grow up in a balanced manner and well.

Some of the cases, cited above can find no place in the curriculum or orientation being currently imparted in the school or college phase. This is a loss leading to reallife situations of complication. The conscious individual would take responsibility for the situation and realise that interventions for rectification are needed.

All these factors influence the quantum of happiness for the individual and may often result in interpersonal strain and tussles. This is clearly not a desirable thing to happen. Nor can it be written off. It can cause untold and unmeasurable misery,. As the talk of the new education policy increases, it is important to realise that the new education policy may be a landmark effort but is not the end of all efforts. There will still be a need for revision, upgrading, and fresh thoughts. Maybe there will be a gradual realisation that education policies have to be periodically evaluated and upgraded to meet the newer challenges that life throws at individuals. This would especially be so with personality-related issues. (The writer is a well-known

management consultant of international repute. The views expressed are personal)

When Two Minorities Clash At The Ivory Tower's Gate

Since the US Supreme Court verdict against affirmative action, black Americans are protesting. But it will also work against the Asian-American groups who aligned with white conservatives

Suraj Yengde



The US Supreme Court judgment on the affirmative action policy of "favourable attention to race" in a 6-3 majority recently held that the University of North Carolina and Harvard University's race-conscious admissions policy

was incommensurate with the "equal protection clause". This has given momentum to conversations around public policy and civil rights. Black people are holding protests, Asian Americans face their wrath.

I remember conversing with a Chinese landlady who would often pit her racial group as 'victim' in America. The usual rags-to-riches story animated much of the discussion. She is one among many Asian Americans, including South Asians, who feel the brunt of diversity and progressive policies.

Many of these immigrants have escaped development and redistribution policies in their home countries – policies they're opposed to. But they wouldn't bat an eye to seek advantages of similar policies in the adopted homeland.

The Asian American Coalition for Education (AACE) had announced that such policies scapegoat Asian Americans and a remedy is to "provide a quality K-12 education to black and Hispanic children". But assumptions that do not account for their own privileges are damaging. The average income of an Asian American is \$87,243; for a South Asian it is \$123,700, the largest of any ethnic group in the US.

The affirmative action policy does not rely on race alone, but on cumulative factors that conjoin, such as personal achievements, SAT scores, essays and GPA. If whites or Asian Americans feel they haven't received admission despite good scores, the blame is not on the black person who has taken the seat. The black person competed with other black people with equally perfect scores. Similarly, Asian Americans competed on multiple factors as noted above, against their own racial category and have not secured admission. Black Americans, a historically marginalised minority, now have to reconsider strategies with other non-white minorities, mostly from Asian and Latin American countries. Immigrant groups that arrive in the US come for economic advancement, and to comfortably advance in the capitalistic hierarchical order. According to PEW, many Indians in the US are recent arrivals who have come through work or student visas.

The story of Indians in the American republic is of a minority trying to become part of a success story, delivering excellently through the language of merit and credentials. With the new court verdict, immigrant groups thirsty for 'meritorious adage' will still have to keep pushing for their own representation in many fields. Undermining race-conscious admission programmes will inadvertently work against the very groups who petitioned the court.

For, the US affirmative action programme is not a detailed promise. It relies on state benevolence, and the employer or institute's, to make liberal policy that'll benefit the potential candidate. However, liberalism as policy often faces conservative wrath and extreme nationalistic viewpoints

of white as well as non-white groups. Is this verdict then the arrival of conservative values at the doorsteps of a new American order? It has certainly be-

ericans

Affirmative

come a mainstream doctrinal stand of the state. It will be the oxygen of policies for future; an ideological triumph.

The difficulty of dealing with anything race is its reliance on those who represent that racial demographic. One could use other measures in admissions or employment. For example, affirmative action concerning gender most often undermines race-conscious programmes.

Asian Americans in the US feel more aligned with aspirations of white conservatives. They have no historical commonality or cultural affinity yet have found common cause in going against the affirmative action policy because they see this as impacting their future in America's caste hierarchy.

If it were only about race, there was no cause for Asian Americans to go to the US Supreme Court and align with the white nationalist. One might ask if the two minority groups, blacks and Asian Americans, are trying to make it to the ivory towers while at loggerheads. With more opportunities increasing to certain racial demographics, the ability to grasp the resources gets uplifted.

The court verdict states affirmative action has "negatively" impacted admission of Asian Americans and utilised stereotyping, both not favoured in the "equal protection clause". Among fiercest critics of affirmative action have been white women. Paradoxically, they benefited the most from such policy, between 1970-2002 tripling as graduate holders.

This is similar to India's reservation policies, where alongside SCs, STs and OBCs, groups who benefit are women, army, NRI, PWD and EWS. But it is always Dalits who do the vocal advocacy: form a political front to preserve the reservation policy. They go to jail and harm themselves for the reservation of others, as seen during the 1990s Mandal Commission debate.

Efforts to deal with this verdict can be learnt from the Indian Constitution, which made reservations for Dalits mandatory. It directed the state to craft policies that would exclusively focus and divert state resources. and create a ministry for their affairs.

The writer is the author of 'Caste Matters' and a researcher at Harvard University

'Rip-off' degrees UK reforms likely to benefit Indian students

HE UK is seeking to effect reforms in its higher education system, with Prime Minister Rishi Sunak announcing a crackdown on the institutes that are mere 'teaching shops' offering 'rip-off' degrees. The students of these institutes have failed to find decent employment and are thus burdened with hefty education loans. Though the move is being criticised by Sunak's opponents, it is likely to benefit Indian students — who have been flocking to the UK in the hope of getting worldclass education from its leading universities and improving their career prospects — in terms of clarity about the value of the courses on offer. Notably, as per the 2020-21 data, Indians are the second largest cohort of international students in the country after the Chinese.

Sunak's argument in support of his aim to protect prospective students from being sold false dreams should be weighed in by all stakeholders. He has backed it with some eye-opening statistics: around 30 per cent of the graduates fail to 'progress into highly skilled jobs or further study 15 months after graduation'. A careful perusal of Britain's ranking of colleges as it sifts the mediocre and below-average ones from the good institutes should be a must for those aspiring to study in the UK.

This situation also assumes significance in the light of a recent social media post by an Indian student in the UK going viral. As she vented her frustration over her inability to find a proper job after graduation, it found resonance among many global graduates and postgraduates as they shared their heart-rending experiences. This is the harsh reality. Whether a course is viable enough to translate into worthwhile work opportunities should be the basis of choosing a college abroad.

संतुलन की मांग करती शिक्षा व्यवस्था

है। ये कार्ययोजनाएं शिक्षा नीति से सत्रों को

पहचानती हैं और उनके क्रियान्वयन का

चरणबद्ध प्रस्ताव प्रस्तुत करती हैं। इनमें

पाठयचर्या और शिक्षण प्रक्रिया में सधार

और आकलन की लचीली पढति का

उल्लेख किया जाता है। एकेडमिक बैंक

आफ क्रेडिट के विकास को बडे पैमाने

पर लाग किया गया है। हर विश्वविद्यालय

शिक्षा नीति के अंतर्गत नए अध्ययन

कार्यकमों को आरंभ करने की योजना

बनाने में अग्रसर हो रहा है। यूजीसी द्वारा

उत्साह पोर्टल आरंभ कर नीति क्रियान्वयन

की निगरानी का भी प्रयास है। इसके लिए

बहअनुशासनात्मकता, डिजिटल संसाधनों

का अधिकाधिक प्रयोग, कौशल विकास

शोध, नवाचार, उद्यमिता और भारतीय

भाषाओं में उच्च शिक्षा के अवसरों को

लेकर उच्च शिक्षा संस्थानों की कार्ययोजना

को निगरानी और उन्हें सहयोग देने का

प्रयास जारी है। इस नीति के क्रियान्वयन

का सकारात्मक परिणाम यह भी है कि

उच्च शिक्षा परिसरों में भारतीय ज्ञान

परंपरा और भारतीय भाषाएं अब एक

अहम घटक को तरह पहचानी जा रही



गिरीरवर मिश्र

सरकारी शिक्षा व्यवस्था जहां अनेक कमियों से जकड़ कर अनुत्पाटक बनी हुई है, वहीं निजी शिक्षा अनियंत्रित होकर बेहद महंगी हुई जा रही है

लाई 2020 में आई राष्ट्रीय ज शिक्षा नीति ने देश में 💙 औपचारिक शिक्षा की चुनौतियों और संभावनाओं का आकलन करते हए समर्थ भारत के निमांण के लिए एक प्रभावी शैक्षणिक ढांचे का खाका प्रस्तत किया। पिछले तीन वर्षों में प्राथमिक शिक्षा से लेकर उच्च शिक्षा एवं शोध के लिए सरकार के संज्ञान में जो भी आया उसे इस नीति के क्रियान्वयन का हिस्सा बनाया गया है। समग्र शिक्षा अभियान की अवधि को 2025-26 तक बढा दिया गया। इसे नई शिक्षा नीति के क्रियान्वयन का माध्यम वनाया गया है। आठ अप्रैल. 2021 को सार्थक (स्टुडेंट्स एड टीचर्स होलिस्टिक एडवांसमेंट थ्र क्वालिटी एजुकेशन) नाम से वहद कार्ययोजना पेश की गई, जो अब एक मागंदर्शिका की भूमिका में है। किसी भी राज्य की विद्यालयी शिक्षा से जडी आधिकारिक वेबसाइट पर इसके आलोक में वनाई जा रही योजनाओं का व्योरा देखा जा सकता है। इसका उपयोग नीति

के तहत किए जा रहे कार्यों की उपलब्धि मापने के लिए भी किया जा रहा है।

इस शिक्षा नीति की एक प्रमुख संस्तुति आधारभूत साक्षरता और गणितीय योग्यता का संवर्धन करना भी है। इस दिशा में पहल करते हुए पांच जुलाई, 2021 को 'निपण भारत अभियान' शुरू किया गया. जिसका लक्ष्य है कि 2026-27 के बीच कक्षा तीन तक के बच्चे पढने और गिनने की आधारभत क्षमता में दक्ष हो जाएं। शिक्षा नीति के क्रियान्वयन की एक मख्य एजेंसी एनसीईआरटी ने इस दिशा में पहल करते हुए जुलाई, 2021 में विद्या प्रवेश नाम का खेल आधारित माडयल बनाया। एनसीईआरटी द्वारा आधारभूत स्तर के लिए राष्टीय पाठयचर्या की रूपरेखा भी प्रस्तुत की जा चुकी है। प्राथमिक और माध्यमिक स्तर को विद्यालयी शिक्षा के लिए भी राष्टीय पाठयचयां की रूपरेखा का एक मसौदा चर्चा और फीडबैंक के लिए आ चका है। एनसीईआरटी ने सेवारत अध्यापकों के पेशेवर विकास के लिए संचालित निष्ठा कार्यक्रम को भी नीति के अनुसार संशोधित किया है। लगभग हर तीन महीने पर कोई न कोई योजना आरंभ हो रही है। इनमें विद्याजेंलि और पीएम श्री योजना प्रमुख रूप से उल्लेखनीय हैं। शिक्षा मंत्रालय 2020 के बाद जिस किसी भी कार्यक्रम और योजना को आरंभ कर रहा है उसे शिक्षा नीति के क्रियान्वयन की शक्ल में प्रस्तुत कर रहा है।

उच्च शिक्षा के स्तर पर किसी केंद्रीकृत सुधार की जगह विश्वविद्यालय और राज्य सरकारों के स्तर पर सुधार के कुछ प्रयास हो रहे हैं। अधिकांश विश्वविद्यालयों की वेबसाइटों पर राष्ट्रीय शिक्षा नीति-2020 की कार्ययोजना का ब्योरा देखा जा सकता



हैं, किंतु अभी यह काम रस्मी तौर पर हड़बड़ी में ही हो रहा है।

विद्यालय स्तर पर नीति के प्रभाव में आवंटित वित्त का प्रस्ततीकरण और समायोजन नए वर्गों में हो रहा है, लेकिन कछ आधारभुत समस्याएं ज्यों की त्यों बनी हुई हैं। विद्यालयों में सीखने के कुछ संसाधन जरूर उपलब्ध हो रहे हैं, परंत सीखने-सिखाने की संस्कृति में कोई बदलाव नहीं हो रहा है। यदि सरकारी तंत्र को छोड दिया जाए तो यह नीति सरकारी विद्यालयों पर जनता में भरोसा विकसित करने की दिशा में कोई खास प्रभाव छोडती नजर नहीं आ रही है। उच्च शिक्षा में कोविड के बाद से सत्र अनियमितता की समस्या का समाधान नहीं हो पाया है। राष्ट्रीय स्तर की प्रवेश परीक्षा के आधार पर स्नातक और परास्नातक में प्रवेश विलंब से हो रहा है। उच्चतर माध्यमिक कक्षाओं के परीक्षा परिणामों की घोषणा और स्नातक में प्रवेश की अवधि में लगभग तीन माह का अंतराल हो रहा है। उच्च शिक्षा के स्तर पर बहअनुशासनात्मकता और सुनम्य व्यवस्था के बीच शिक्षण-

अधिगम सुदृढ़ होने के बजाय 'शाटकट' अपनाता नजर आ रहा है।

संप्रति शिक्षा केंद्रों की बदहाली के अनेक आयाम हैं जिन पर गौर करना जरूरी है। आज विद्यार्थियों के लिए व विकर्षण का केंद्र बन रहे हैं और विद्यार्थी साधन जुटाकर विदेश का रुख कर रहे हैं। तमाम सामान्य या उससे नीचे की संस्थाएं भी नैक से उच्च और उच्चतर ग्रेंड का प्रमाणपत्र पाकर आगे बढ रही हैं। आम आदमी निरुपाय और भ्रमित हो रहा है। उच्च शिक्षा के अध्यापक नई शब्दावली और प्रस्तुति के बीच ऐसे उलझे हैं कि वे क्या और कैसे पढाएं में नवाचार के बजाय परानी पाठयचर्या पर नए कवर चढाकर आगे बढ रहे हैं। उद्यमिता विकास के नाम पर उच्च शिक्षा संस्थानों और उद्यम आधारित अधिगम स्थलों के बीच तालमेल का अभाव है। विद्या के परिसर में ज्ञान की संस्कृति को जगह जोड-तोड की राजनीति और गैर-अकादमिक आकांक्षाओं को साकार करने पर अधिक जोर दिया जाने लगा है। कछ विशेष-स्वायत्त शैक्षिक संस्थाओं को छोड दें तो अन्य संस्थाएं उदासीनता, हस्तक्षेप और अव्यवस्था से गस्त होकर समझौते करने के लिए विवश हैं। सरकारी व्यवस्था जहां अनेक कमियों से जकड कर अनत्पादक बनी हुई है, वहाँ निजी शिक्षा अनियंत्रित होकर बेहद महंगी हुई जा रही है। गुणवत्ता और मानक के स्तर को चिंता आकडों में फंस रही है। यदि नई शिक्षा नीति को अपेक्षित रूप से सिरे चढाना है तो शैक्षिक व्यवस्था में आधारभुत बदलाव लाना हो होगा। तभी उसको साख बचेगी।

(लेखक पूर्व कुलपति और शिक्षाविद् है। ∞5 (\o response@jagran.com

The human angle of entrepreneurial skill sets

Along with the major trait of independence, vision is a projection of an entrepreneur's mind where s/he breathes life into an opportunity

A general definition of an entrepreneur is a poperson who identifies "opportunities" in an environment that have the potential to generate wealth by making profits. These could be situations where an entrepreneur establishes new products, services, resources or procedures, which can be sold at a higher price than their cost of production.

So, if entrepreneurship is taking advantage of any potential profit-making opportunity, then why is everyone not an entrepreneur? Kceping the external factors constant, the reasom lies in the variation of individual characteristics and personal motivational factors. Even though it may be very easy to talk about identifying



HIMA BINDU KOTA

(The writer is an educator).

opportunities and pursuing them to make profits, in actuality opportunities can be very subjective.

Opportunities may not be cognizable to most people; and in many situations, perceived as risky. Thus, how people perceive different opportunities and their will-

ceived as risky. Thus, how people perceive different. opportunities and their willingness and abilities to pursue them have a crucial impact on any entrepreneurial journey. Therefore, in this context, we can say that entrepreneurship is an extremely personal journey, of people's ability to recognise opportunities, envision opportunities, and pursue them by taking risks.

Let us take an example of vision. Vision is nothing but a projection of an entrepreneur's mind where he breathes life into an opportunity, giv-

ing his interpretation of how to exploit the same. Make no mistake that all visions are accurate. Many times, entrepreneurs make judgment errors in valuing an opportunity. The opportunity may not be worthy or may not be valuable in its existing form.

Risk and return generally have a linear relationship. This means that if one takes a higher risk, his return can be potentially higher. While taking risks for a future higher gain can be safely predicted in an established business, if may not be as straightforward in entrepreneurship. Many times, entrepreneurs start new companies in already existing markets, where industry dynamics and risk-return relationships are known. But there are several cases where



entrepreneurs find new Industries to start their companies. Such entrepreneurs are willing to take risks, handle the fear of the unknown and cope with the lack of surety of desired outcomes.

Let us take an example of the biotechnology industry. The future of this revolutionary industry, when in its

nascent stages in the 1970s. was at best unpredictable. Research & development, 'venture capital', and 'technology transfer' were some terms given to the world by this industry. Since, most of the time, in biotechnology, the product was a bio-organism. there was no clarity about product patents. Over the years, things started falling into place, including the patent rules. Keeping external factors like high capital requirements aside, the abil ity of an individual to work in an ambiguous and risky environment is to be noted.

In 1973, Cohen and Boyer discovered recombinant DNA technology, which jump-started the biotechnology industry. While Cohen collaborated with, venture capitalist

Swanson and created Genentech, Boyer remained in academia. Here again, human factors kick in and these entrepreneurs with higher optimism and greater tolerance for risk, contribute to the variation in risk-tolerance behav iour across the entrepreneurs' pool. So, an individual's ability to not get discouraged in the face of low success and willingness to progress despite these odds is also crucial for an entrepreneurial journey. Surprisingly, research

shows that individuals with high tolerance to ambiguity find unpredictability appealing instead of frightening. The wheels of the entrepreneurial journey also run on the higher achievement needs of entrepreneurs. Since many entrepreneurs: have a greater

requirement to show achievements, they generally involve themselves in activities that entail greater individual skills and a hands-on approach.

Their actions are result oriented, they seek clear feedback on performance. This individual character is known to be a strong differentiator between an entrepreneur and an employee. Overall, all these above-mentioned individual entrepreneurial characteristics can be summed up into one major trait of independence. Entrepreneurs' desire to be independent in taking control of their own lives, judge ments and responsibilities: be it pursuing opportunities that may not be visible to others or being responsible for their outcomes, plays an everimportant role. Pick 7

भारतीय ज्ञान परंपरा को प्रोत्साहन

प्रवर्तित शिक्षा-व्यवस्था की काले आलोचना हम वर्षों से नहीं, बल्कि कई दशकों से सुनते चले आ रहे हैं। तमाम शिक्षाविदों ने उसके दुष्प्रभावों पर प्रकाश डाला है। अंग्रेजों ने सदियों से चली आ रही भारतीय ज्ञान परंपरा की न केवल उपेक्षा की. बल्कि उसे नष्ट-भ्रष्ट भी किया। वे कला, संगीत, साहित्य, न्याय, दर्शन, स्थापत्य, मूर्तिकला, योग, धातु विज्ञान, वस्त्र-निर्माण, रसायनशास्त्र, गणित, खगोल, ज्योतिष, चिकित्सा और कृषि आदि विविध क्षेत्रों में भारतीयों की समृद्ध एवं गौरवशाली ज्ञान परंपरा से भली तरह परिचित थे। वे जानते थे कि इनके रहते भारतीयों को वास्तविक अर्थों में परतंत्र एवं परावलंबी नहीं बनाया जा सकता। इसलिए उन्होंने तमाम नीतियों एवं योजनाओं द्वारा पहले तो ज्ञान के इन परंपरागत स्रोतों को नष्ट किया और फिर सुनियोजित तरीके से इन सबके प्रति हम भारतीयों में होन भावना विकसित की।

स्वतंत्रता के पश्चात सत्ता का हस्तांतरण तो हुआ, पर तंत्रगत नीतियों एवं तौर-तरीकों पर औपनिवेशिक मानसिकता हावी रही। समय-समय पर भारत और भारतीयता को पोषित करने वाले विचार सुनाई दिए, लेकिन परिवर्तन की निर्णायक परिणति तक वे नहीं पहुंच पाए। परिणामस्वरूप शिक्षा व्यवस्था संबंधी जिन प्रश्नों और समस्याओं सं हम स्वतंत्रता के पूर्व जुझ रहे थे, उनसे बाद में भी दो चार होते रहे। हमारा 'स्व' कहीं विस्मृत हो गया था, जिसे पाने और पहचानने का गंभीर प्रयास बीते दशकों में लगभग नहीं के बराबर हुआ। राष्ट्र के 'स्व' को पहचानने, पाने एवं आत्मसात करने में शिक्षा और उसमें भी भारतीय ज्ञान-परंपरा की महती भूमिका है। भारतीय ज्ञान परंपरा के जिन विषयों को पिछडा और प्रतिगामी मानकर लगभग विरमुत कर दिया गया था. सुखद हैं कि अब जाकर उसको संघ ली गई है।

राष्ट्रीय शिक्षा नीति में भारतीय ज्ञान परंपरा के अध्ययन अध्यापन पर विशेष बल दिया गया है। नटं पीढी का भारतीय जात परंपरा से जोड़ने की दिया में यू जीखी न गंधीर पहल की है। प्रत्येक विषय या कोस में अब जारतीय ज्ञान परंपरा से संबद्ध पैसो बातों का जोडा जा रहा है, जिसस नई पीढ़ी में भारतीय होने का गौरवंबीघ तो जागुत होगी ही. साथ ही उस ज्ञान के बल पर उन्हें परी दीनया



प्रणय कुमार



यह सुखद है कि

जिस भारतीय ज्ञान

परंपरा को पतिगामी

मानकर मुला दिया

गया था, उसकी अब

सघ ली जा रही है

आवश्यक है प्राचीन ज्ञान की महत्ता समझना 🗉 प्रतीकात्मक में एक मौलिक एवं विशिष्ट पहचान भी मिलेगी। यजीसी ने भारतीय ज्ञान-परंपरा पर आधारित एक पाठयक्रम भी तैयार किया है, जिसमें रामायण-महाभारत कालीन कषि और सिंचाई जैसी व्यवस्था. खगोल विज्ञान की वैदिक अवधारणाएं और वैदिक गणित, सुश्रुत संहिता में वर्णित उपचार व्यवस्था आदि को प्रमखता से जगह दी गई है। इसके साथ ही प्राचीन भारत के उन विद्वानों का भी उल्लेख है जिन्होंने भारतीय शिक्षा को एक नई ऊंचाई दी। इनमें चरक, सश्रत, आर्यभट, वराहमिहिर, भास्कराचार्य, ब्रह्मगुप्त, चाणक्य, पाणिनि, पतंजलि, मैत्रेयी और गागीं आदि नाम प्रमुख हैं। उल्लेखनीय है कि भारतीय जान परंपरा के अंतर्गत जिस विषयवस्त को आधुनिक विषयों के रूप में पढ़ाने की संस्तुति की गई है, उनमें प्राचीन बीजगणित, ज्योतिष, भारतीय वाद्य यंत्र, भाषा विज्ञान, धातुशास्त्र, वास्तुशास्त्र, मुर्ति विज्ञान और प्राचीन भारत में जल प्रबंधन आदि के साथ वेद, वेदांग, भारतीय दशन, साहित्य, छंद, व्याकरण, निरुक्त, चिकित्सा, कृषि, अर्थशास्त्र आदि को शामिल किया गया है।

यूजीसी ने भारतीय ज्ञाने परपरों की पी.साहन देने के लिए शिक्षकों की भारतीय ज्ञान परपरा में प्रशिक्षित करने की योजना भी प्रारंभ की है। इसी शैक्षणिक सन्न में एक हजार शिक्षकों को प्रशिक्षित करने का लक्ष्य रखा गया है। सभी उच्च शिक्षण संस्थानों से दो-दो शिक्षकों को उसके लिए नामित करने के लिए भी कहा गया है। प्रशिक्षण को कल अवधि में से न्युनतम दस प्रतिशत समय भारतीय जान परंपरा के लिए सनिश्चित किया गया है। इस प्रक्रिया में भारतीय ज्ञान को एक स्वतंत्र विषय के रूप में पढाने के स्थान पर, वर्तमान में पढाए जा रहे प्रत्येक विषय में उससे संबंधित प्राचीन एवं परंपरागत विषयवस्त को जोडा जाएगा। विद्यालयी शिक्षा के लिए तैयार किए जा रहे पाठयक्रम में भी भारतीय ज्ञान परंपरा को प्रमुखता से स्थान देने की पैरवी की गई है। फाउंडेशन स्तर के पाठयक्रम में भी इसकी झलक देखने को मिल रही हैं। इस स्तर के पाठ्यक्रम में सम्मिलित किए गए खिलौनों को भी भारतीय ही रखा गया है. ताकि बच्चे उन्हें आसानी से पहचान सकें और उनके माध्यम से अपने परिवेश के साथ सहजता से जुड सकें। ऐसी व्यवस्था बनाई गई है कि स्नातक स्तर के कुल अनिवार्य पाठयक्रम में से न्युनतम पांच प्रतिशत क्रेडिट भारतीय ज्ञान-परंपरा के पाठयक्रम में से छात्रों को मिले। इससे छात्रों को इस पाठयक्रम को पढने की प्रेरणा मिलेगी।

दनिया का हर जागरूक एवं विकसित देश अपनी सभ्यता, संस्कृति, ज्ञान-परंपरा एवं विरासत को सहेजने का प्रयत्न करता है। फिर भारत तो एक ऐसा देश है. जिसकी सभ्यता, संस्कृति, परंपरा आदि में दुनिया को दिशा देने वाली मौलिक. किंत सार्वभौमिक विशेषताएं देखने को मिलती हैं। तमाम झंझावातों तथा आक्रमणों को झेलकर भी उसने अपनी मौलिकता एवं सावभौमिकता नहीं खोड़ है। हिंसा और कलह से पोडित विश्व मानवता को राह दिखाने को शक्ति भारतीय ज्ञान परंपरा में निहित है। सबसे बडी बात यह है कि एक ओर जहां यह योग, आयुर्वेद, स्थापत्य, अनुदर्शनिक कर्म, दस्तकारी, कृषि, पश्चालन, बागवानी आदि क्षेत्रों में रोजगार को दाएँ से अत्यत उपयोगी रहेगा. वहां दसरा और आन भौतिकतावादी एवं यात्रिक जीवनशैला से उत्पन विसीमतमी को दु करने में भी सहायन सिद्ध होगा।

> (लखक शिक्षाविद एव) शिक्षा सापान सामाजिक संस्था के संस्थापक है। ∞21% response@jagran.com

Industry-academia collaboration for MSMEs

Dr Tulika Devi

n today's rapidly evolving economic landscape, collaboration between industries and academia has become increasingly vital, especially for micro, small and medium enterprises (MSMEs). MSMEs play a crucial role in driving economic growth, innovation and job creation. However, they often face challenges in terms of limited resources, access to technology and market reach. To overcome these obstacles, fostering strong ties between MSMEs and academia can vield remarkable benefits.

Industry-academia collaboration refers to the strategic partnership between MSMEs and academic institutions such as universities, research centres and vocational training institutes. It aims to leverage the complementary strengths of both sectors to drive innovation, enhance competitiveness and address real-world challenges. By joining forces, industry and academia can pool their expertise, knowledge and resources to create a synergy that propels MSMEs towards sustainable growth and success.

The primary objectives of industry-academia collaboration for MS-MEs are threefold: knowledge exchange, skill development and research and development (R&D) support. Academic institutions possess a wealth of knowledge, cutting-edge research facilities and a talented pool of faculty members and students. On the other hand, MSMEs bring industry-specific expertise, practical insights and market-driven demands. Together, they form a powerful alliance that can bridge the gap between theoretical concepts and practical applications.

One of the key benefits of industry-academia collaboration for MS-MEs is the opportunity for knowledge exchange. Academic institutions can provide MSMEs with access to the latest research findings, emerging technologies and best practices from various fields. This knowledge transfer enables MSMEs to stay abreast of industry trends, adopt innovative approaches and enhance their operational efficiency. Simultaneously, MSMEs can share their real-world experiences, industryspecific challenges and market insights, enriching the academic curriculum and research agenda.

Skill development is another crucial aspect of industry-academia collaboration. MSMEs often struggle to find skilled workers who possess the specific competencies required in their industries. Collaborating with academic institutions enables MS-MEs to actively participate in designing and updating the curriculum, thereby aligning it with industry needs. This partnership facilitates the development of a skilled workforce tailored to the requirements of MSMEs, reducing the skill gap and enhancing employability. Internship programmes, apprenticeships, and joint training initiatives further empower students with hands-on experience, making them industryready upon graduation.

Research and development support is a critical driver of innovation and competitiveness for MSMEs. Academic institutions can collaborate with MSMEs to undertake joint R&D projects, product development and technology transfer. By conducting applied research and translating academic knowledge into practical solutions, industry-academia collaborations enable MSMEs to develop new products, improve existing processes and tap into emerging markets. Additionally, access to research grants, funding opportunities and intellectual property rights guidance empowers MS-MEs to leverage the resources and expertise available in academia.

Industry-academia collaborations in India have supported MSMEs through initiatives like Technology Business Incubators (TBIs), collaborative research projects, skill development programmes and technology transfer centres. Examples include Society for Innovation and Entrepreneurship (SINE) at the IIT Bombay, SIDBI In-

novation and Incubation Centre (SIIC) at the IIT Kanpur, Bharat Forge - Indian Institute of Science (IISc) Bangalore collaboration, skill development initiatives by NSDC, Technology Transfer and Commercialisation Office (TTO) at the IISc Bangalore, T-Hub, and Mahindra Research Initiative on Sustainable Enterprises (Mahindra-RISE). These examples highlight the diverse ways in which industryacademia collaborations have been successful in supporting MSMEs in India. Through such collaborations, MSMEs gain access to resources, knowledge and networks that contribute to their growth and competitiveness in the market.

Industry-academia collaboration in Assam holds immense potential for driving innovation, economic growth and sustainable development.

Technology adoption and innovation: MSMEs in Assam, including those in the handicraft or handloom sectors, can collaborate with design institutes or engineering departments of universities to incorporate modern technologies, such as automation or digital design tools, into their production processes to improve efficiency, product quality and market competitiveness.

Entrepreneurship and incubation: Academic institutions in Assam can establish entrepreneurship cells or incubation centres for providing extensive support and mentorship to aspiring entrepreneurs. By forging collaborations with industries, these centres can offer students the chance to tackle realworld challenges and address business problems.

Skill development and training: Industries in Assam, such as the tea industry, can collaborate with local universities or vocational training institutes to develop specialised training programmes for workers. This collaboration would help bridge the skill gap and provide industry-specific training to enhance the employability of individuals in the sector.

Research and development: Assam is known for its rich biodiversity, and industries such as pharmaceutic cals, biotechnology, and agriculture can collaborate with academic institutions in the State to explore the potential of indigenous plant species for medicinal purposes, develop sustainable farming practices, or enhance crop yields through genetic research.

Renewable energy development: Assam has significant potential for renewable energy generation, particularly in areas such as hydroelectric power and solar energy. Industries operating in the energy sector can collaborate with engineering departments of local universities to conduct research, develop innovative technologies and optimise energy systems for improved efficiency and sustainability. $NT_2 a/c$

'Student documents checked thrice'

Solicitor, and a Canadian Immigration Lawyer. He is a speaker, author, visiting professor and advisor-at-large on legal matters. As a Rhodes Scholar, he wrote his PhD thesis "International Refugee Law in South Asia" at the London School of Economics. He has read for a Masters of Laws (LLM) at the University of London, an MPhil in International Law and MA at the Jawaharlal Nehru University, New Delhi, and a BA and LLB in India.

Sen worked for the United Nations High Commissioner for Refugees (UNHCR) in Geneva and worldwide. A legal advisor to the UN and other international organizations in the area of human rights, refugee law and displacement, Sen spoke over phone to Ranjeet Jamwal on the deportation faced by the Indian students in Canada. Some excerpts:

Q: The government of Canada has decided to postpone the deportation of 700 Indian students after facing huge protests. The reason?

A: This is I think because of the policy of the government of Canada. They are trying to see what has happened in the first place. This is perhaps the reason for this stay. It's stay of removal but the removal has not been quashed. It's still there but the students will not be removed as of now. There are lots of things which need to be looked at. The students are obviously victims of fraud. They had no idea what was happening. It's the agents in India who have done it. And basically what has happened is that



students had no idea of this fraud and the government of Canada also failed in its own duty of checking the documentation.

These people have got the visa for coming to Canada. Their documents were first checked by the High Commission of Canada in India, then after coming here they got the student permit and have done their studies. After completing the studies, they also took the work permit. So their permits have been scrutinised three to four times after coming to Canada. So what was the government of Canada doing ? There has been a flaw. There is a problem in the verification process. Now efforts are being made to fix this.

Q: How were the visas granted on the basis of a fake admission letter?

A: There are 7.50 lakh students who apply to come to Canada annually. Ouf of this, four lakh students get the visa for study in Canada. So one can imagine how big a process it is. How will the government of Canada go to each college to verify if the admission certificates are genuine or not? On top of it, there can be several other things that can be fake. The IELTS (International English Language Testing System) scores can be fake. Even the financial documentation can be a fraud. There is a limit to how much the government can check. They take the documents at face value and deep scrutiny is done only when they suspect some fraud.

Q: Indian students reached Canada with fake admission letters of Canadian educational institutions. But still got admission in 'other' educational institutions on the same visa?

A: The study visa is not for a particular college. The concerned college had no ide a what was going on. Brijesh Mishra (the Jalandhar-based education consultant at the centre of the racket for issuing fake admission letters of Canadian educational institutions to students who are now facing deportation) gave students fraudulent letters. When students came here in Canada, Mishra called and told them this college (for which he had given an admission letter) is now full and to get an admission at another college. So they believed him.

Q: Why were the students not sent to the same college in the first place?

A: Because the students don't get work permits in such colleges he (Mishra) sent the students later. I have the information and I will call those colleges to court. What the agent has

done is kabbortarbazi or human trafficking. So he and his associates should be found and arrested. They have caused so many problems for these students. They weep in my office. Canada is okay with the studies done by the students. the work permits. They are all okay. But the document with which they got entry into Canada, is wrong. Misrepresentation has taken place and that's why the Canadian government is after them. But we have appealed against it and are fighting against it. But it's something called innocent misrepresentation. Yes the mistake has been made but it was not done intentionally. It's in the law here that a person is not removed for innocent misrepresentation. I have fought such cases.

Q: What is the implication of this on the students who are planning to go to Canada? Will they be facing more scrutiny?

A: Well, I don't know how the scrutiny will be done because there is no system for this. Across the world there is no system to verify 7.5 lakh admission letters. This is where we will come in the picture and tell the students to get the verification done. If a student's IELTS score are fake, then the students are responsible. But if you passed the IELTS, have paid the finances for the admission, now the admission letter is the only thing that's coming through an agent. How do you know the agent is not doing what Mishra was doing? So we came up with the Canada Education Verification Service to help students with this venification so that they will have no problem stat (22/7 दुनिया भर के टैलंट को आकर्षित करना हर पक्ष के लिए फायदेमंद है वर्कर्स जाए परदेस, खुलेगी किरमत



अध्ययन बताते हैं कि अगर पूरी दुनिया को माइग्रेशन के लिए खोल दिया जाए तो ग्लोबल जीडीपी में 50–150 फीसदी तक की भारी बढ़ोतरी हो सकती है

है। इनमें करीब 90 लाख STEM (साइंस, टेक्नॉलजी, इंजीनियरिंग एंड मैथमेटिक्स) वर्कर हैं और करीब 10 लाख डॉक्टर। ध्यान रहे, अभी दुनिया में डॉक्टरों की कुल तादाद ही 1.3 करोड़ है जिनमें 10 लाख से कुछ ज्यादा भारत में हैं।

ऐसे में अगर सभी देश उन देशों के 10 फीसदी और स्किल्ड माइग्रेंट्स स्वीकार करने लग जाएं जहां से उनके यहां पहले से ही ये माइग्रेंट्स आ रहे हैं तो इसका परिणाम क्या होगा? पहला फायदा तो स्पष्ट रूप से खुद उन माइग्रेंट्स का होगा। कैरेबियन या सेंट्रल अमेरिका से संयुक्त राज्य अमेरिका आने वाले किसी डॉक्टर की बात करें तो उसके वेतन में भारी बढ़ोतरी (करीब 16 लाख डॉलर के बराबर) होगी। लेकिन इसके साथ ही उन देशों का भी फायदा होगा जहां ये स्किल्ड माइग्रेंट पहुंचेंगे। एक तो यह कि स्पेशलाइज्ड डॉक्टरों की संख्या बढ़ने से उपलब्ध जगहें भरेंगी, जिससे कम स्पेशलाइज्ड डॉक्टर या नर्स अपने मूल काम पर फोकस कर पाएंगे। दूसरे, आर्थिक विकास दर भी थोड़ी ऊंची होगी। वजह यह है कि सोचने, काम करने और समस्याओं को हल करने के अलग-अलग तरीके लागू किए जाएं तो इनोवेशन में तेजी आती है, जिससे ग्रोथ को मजबूती मिलती है। इसके अलावा इन देशों का एक स्पष्ट फायदा यह भी है कि उन्हें शिक्षा पर खर्च किए बगैर ही स्किल्ड वर्कर मिल जाते हैं।

जिन देशों से ये माइग्रेंट आ रहे हैं, उन्हें भी इस प्रक्रिया में लागत से ज्यादा फायदा है। आम तौर पर हम इसे ब्रेन डेन के ही रूप में देखते हैं जिसका बडा पहल यह होता है कि उस देश को नए डॉक्टरों की शिक्षा पर खर्च करना पडता है। लेकिन नई रिसर्च से यह बात स्थापित होती है कि यह खर्च उन फायदों के मुकाबले कुछ भी नहीं जो उस देश से जाने वाले स्किल माइग्रेंट व्यापार, निवेश और उत्पादन के नए चैनल स्थापित करके अपने मूल देश को पहुंचाते हैं। यही नहीं ये लोग अपने परिवारजनों और रिश्तेदारों को नियमित रूप से रेमिटेंस भेजते हैं. जिसे ये परिवार शिक्षा और अन्य अच्छे मदों में खर्च करते हैं। शायद इन्हीं वजहों से भारत मुफ्त व्यापार समझौतों पर बातचीत के दौरान हमारे स्किल्ड प्रफेशनल्स की लेबर मार्केट तक पहुंच सुनिश्चित करने पर लगातार जोर दे रहा है। वह स्किल्ड वर्कफोर्स के लिए ग्लोबल मोबिलिटी को बढावा देने में सक्रियता से लगा हुआ है, लेकिन समझना जरूरी है कि यह कोई वनवे ट्रैफिक का मामला नहीं है। विकसित देशों के लिए भी ग्लोबल टैलंट को आकर्षित करना और उसकी क्षमता का इस्तेमाल करना जरूरी है। उदाहरण के लिए, चीन का ' थाउजेंड टैलंटस' कार्यक्रम दुनिया के सर्वश्रेष्ठ मस्तिष्कों को आकर्षित कर रिसर्च कार्यों में उनका इस्तेमाल कर रहा है जिससे इनोवेशन को नई रफ्तार मिल रही है। ऐसा नजरिया केवल चीन का नहीं है। अमेरिका का रिसर्च और डिवेलपमेंट इकोसिस्टम इस तरह की रणनीति के लिए आदर्श है। दुनिया के हर हिस्से के टॉप टैलंट को आकर्षित कर अमेरिका जीवंत आर एंड डी लैंडस्केप का निर्माण करने में कामयाब रहा है।

कम खर्च, अधिक फायदा

बहरहाल, इस तरह की नीतियों से वैश्विक स्तर पर हर व्यक्ति के लिए फायदा खर्च के मुकाबले कहीं ज्यादा होगा। जहां अगले 25 वर्षों तक के लिए इस पर आने वाला कुल खर्च करीब 55 अरब डॉलर बैठता है वहीं फायदा खरबों डॉलर में। इस नीति पर खर्च होने वाला हरेक डॉलर दुनिया भर में 18 डॉलर के बराबर के सामाजिक फायदे दिलाएगा जिसका बड़ा हिस्सा दुनिया के गरीब देशों की ओर ही जाएगा। जाहिर है, यह ऐसा मौका है जिसे यूं ही गंवाना नहीं चाहिए।

(बिबेक देबरॉय प्रधानमंत्री की आर्थिक सलाहकार समिति के अध्यक्ष, ब्योनं लोमबोर्ग कोपेनहेगेन कंसेंसस के अध्यक्ष एवं आदित्य सिन्हा प्रधानमंत्री की आर्थिक सलाहकार परिषद में अपर निजी सचिव (अनुसंधान) हैं)

NBTON 14



बिबेक देबरॉय, ब्योर्न लोमबोर्ग, आदित्य सिन्हा

अगर दुनिया वैश्विक असमानता को खत्म करने के सवाल पर सचमुच गंभीर है तो कई अर्थशास्त्रियों के मुताबिक इसका एक स्पष्ट तरीका यह है कि ग्लोबल माइग्रेशन की इजाजत दी जाए। एक नर्स गरीब देशों में औसतन करीब 1900 डॉलर सालाना कमाती है लेकिन अमीर देशों में उसी नर्स की कमाई होती है सालाना 32000 डॉलर। इकॉनमिक थियरी कहती है कि दुनिया भर के गरीब लोगों को अगर अमीर देशों में बसने दिया जाए तो वे कहीं ज्यादा प्रॉडक्टिव और अमीर हो जाएंगे। अध्ययनों से यह बात बार-बार सामने आ रही है कि अगर पूरी दुनिया को माइग्रेशन के लिए खोल दिया जाए तो ग्लोबल जीडीपी में 50-150 फीसदी तक की भारी बढोतरी हो सकती है।

व्यावहारिक पॉलिसी

हालांकि इसका एक परिणाम यह भी होगा कि दुनिया भर से करीब 200 करोड़ वर्कर अमीर देशों का रुख कर लेंगे। ऐसे में अमीर देशों का कोई भी मुख्यधारा का नेता फ्री मोबिलिटी की वकालत नहीं करेगा। लेकिन इसका एक विकल्प भी है जो ज्यादा व्यावहारिक है और न सिर्फ असमानता कम कर सकता है बल्कि गरीब और अमीर दोनों तबकों के लिए फायदेमंद साबित हो सकता है। वह है स्किल्ड माइगेशन को बढ़ावा देने की नीति। चुंकि हम सस्टेनेबल डिवेलपर्मेंट गोल्स (SDG) के तहत

चूबिक हम संस्टनबल डिपलमेंट जारन (SDO) क सरम किए गए सभी वायदे पूरे करने की स्थिति में नहीं हैं, इसलिए हमें सबसे कारगर नीतियों पर ध्यान देने की जरूरत है। कोपेनहेगन कंसेंसस के लिए हुई नई रिसर्च में 12 ऐसी प्रभावी नीतियों की पहचान की गई है जो कम खर्च में ही जबर्दस्त फायदा पहुंचा सकती हैं। स्मार्ट माइग्रेशन ऐसी ही एक नीति है, खासकर असमानता कम करने के लिहाज से। जिन देशों में स्किल्ड लेबर की जरूरत है वहां अगर ज्यादा स्किल्ड माइग्रेशन सुनिश्चित किया जाए तो इससे न केवल प्रॉडक्टिविटी बढ़ेगी बल्कि असमानता में भी कमी आएगी।

माइग्रेशन पर हुई एक नई स्टडी में ज्यादा स्किल्ड माइग्रेशन (खासकर डॉक्टर और STEM वर्कर्स) के प्रभावों की पड़ताल की गई है। दुनिया में आज करीब 3.7 करोड़ स्किल्ड माइग्रेट

ILLUSTRATION SREEJITH R KUMAR



Preserving the essence of research

We can use software to help us in research, but asking programs such as ChatGPT to write the full paper defeats the very purpose of scientific inquiry

V. Mohan

drmohans@diabetes.ind.in

read an article by Gemma Conroy on how scientists used ChatGPT to generate an entireresearch paper from scratch and it left me both amused and annoyed. Having started publishing research papers in the 1970s as an undergraduate medical student, I reflected on how much things had changed during the past 50 years.

When I started my journey in publishing research papers, there was no PubMed or Google – why, there were not even computers! One had to go to the medical college library which, if one was lucky, would have a journal relevant to one's topic but the articles would be those published several months ago, as in those days, journals were sent by surface mail from abroad.

One had to go through articles manually, look up the references at the end of the article, tabulate the cross references, make a list of relevant papers needed and then start the process of trying to get those articles. A few would be available at the National Medical Library in Delhi, but it would mean a long trip to get the references, and that was not cheap. Moreover, after spending a day or two browsing through the journals, one would have to request for copies of articles which could take a few weeks to be photocopied and sent to Chennai.

Hard days

Since there were no computers, one had to write the articles in long hand and then get it typed out on a manual typewriter. One had to maintain a list of references separately and include them in the article as the paper progressed. By the 1980s, computers had arrived which made the typing of articles much easier.

With the advent of PubMed and Google, life became much easier for the researcher – for, at the touch of a button, one could at least get the abstracts of all relevant articles published anywhere in the world. It still meant that one would have to write the articles oneself.

Soon, the concept of "ghost writing" through medical writers arrived and some, particularly in the pharmaceutical industry, started employing these medical writers to write articles for them. Finally, we are now in the era when the entire article is written by ChatGPT!

What do these entail for the young researcher? In all fields, we are seeing skill sets declining. In clinical medicine, the use of the stethoscope or one's fingers to palpate the abdomen or percuss or auscultate the chest are all rapidly disappearing as these are being replaced by X-rays and CT and MRI scans. I find that young doctors who come to train with me are unable even to write a patient's case notes properly. Their reading skills have come down considerably and most of them use cellphones to Google whatever information they want. With the arrival of ChatGPT, this could be the death knell for scientific writing among junior researchers. ChatGPT is so clever that it is even difficult to detect plagiarism. It's a great pity if our mental abilities and skills are not honed and we lose the skill of scientific writing.

Undoubtedly, we can make use of software to help us in our research, but asking programs such as ChatGPT to write a full paper, defeats the very purpose of scientific inquiry. The word research literally means that we have to search and search again. When using the likes of ChatGPT, there is no searching or researching – we are simply outsourcing the job to a computer.

I can foresee that if this trend continues, the number of publications and citations, impact factor of journals, the h-index and other scientometric indices used to measure research, will all become redundant.

It will also be difficult to detect scientific fraud, because as these programs improve, they will make detection of fraud more difficult. For those of us who are brought up in the conventional way of doing research, these developments are worrisome to say the least. It is even more frightening when we think ahead to what the next frontiers in computers and artificial intelligence will bring. 00 ¬

HINDUSTAN TIMES, (P-14), 23 JULY 2023

Indian Americans must · back affirmative action

ate last month, the United States Supreme Court (SCOTUS) ruled that the admission policies of Harvard University and the University of North Carolina (UNC), which gave weightage to students from minority communities, especially African Americans, Hispanics and Native Americans, were unconstitutional and, therefore, illegal. The ruling, part of a series of regressive rulings delivered by

the conservative super-majority court, was widely cheered by opponents of the so-called raceconscious college admissions, including many Indian Americans, who saw it as a first step toward the elimination of affirmative action at all levels.

In contrast, supporters of affirmative action were outraged, perceiving it as a continuation of

the decades-long efforts by the American Right, with the help of the judiciary, to undermine the advances made in racial equality over the past 70 years.

The race conscious admission policies have been in place in many higher educational institutions for decades. The underlying principles behind them were to give opportunities to groups underrepresented in higher education and address historical injustices by granting preferences to races that have historically faced discrimination. Their largest beneficiaries have been students from African American and Hispanic communities, which are the third and second-largest ethnic groups in the United States (US) respectively, following white Americans. As a result of these policies, the representation of African Americans and Hispanics has increased in many top US schools. For example, in the admitted Harvard class of 2026, African Americans account for I5.2% of all admitted students, surpassing their current representation of 13.6% in the US population. The share for Hispanic or Latino students was 12.6%,

which is below the proportion of the community's population, estimated at 19.1%.

Many Indian Americans backed the verdict, including two Republicans — Nikki Haley and Vivek Ramaswamy — vying for the highest office in the land. They held this position because they believe that race-based admission policies diminish the opportunities for their

children to gain admission into prestigious educational institutions.

The argument that Asian Americans face discrimination in school admissions contradicts the evidence. In the majority of elite US schools, Asian Americans are the only group that is overrepresented by its percentage in the population. For instance, at Harvard, Asian Americans, who constitute 6.3% of the US population, occupy a significant 27.9% of the seats in the class of 2026. Similarly, at Yale, the Asian American representation in the class of 2026 stands at 16.8% and at Columbia University, it is 12.88%. Comparing the same classes, the representation of African Americans at Yale stands



The argument that Asian Americans face discrimination in school admissions contradicts the evidence.

at 6.9%, while at Columbia, it is 5.05%. As for Hispanics, their share is 11.2% and 8.38%, respectively. These statistics demonstrate that, despite the existence of affirmative action, the representation of African Americans and Hispanics in many elite universities remains significantly below their share in the US population.

These numbers highlight the need for continued efforts to enhance their representation.

As noted in this column previously, Indian Americans have been fortunate to experience relatively less severe racism compared to several other immigrant communities. This is due to the fact that largescale Indian immigration to the US occurred after the passage of the Immigration and Nationality Act of 1965, which enabled'citizens of non-Caucasian nations such as India to immigrate. Furthermore, Indian Americans have benefited from the longstanding struggles of African Americans, resulting in civil rights legislation that prohibited various forms of racial discrimination and provided legal frameworks to address them.

It is essential for Indian Americans, as a minority community, to recognise that societal progress relies on providing opportunities to the underprivileged minority sections of the population. Fortunately, a significant portion of Indian Americans, much like vice-president Kamala Harris, understand and value the significance of affirmative action. Aarti Kohli, executive director of Advancing Justice - Asian Law Caucus, expressed this sentiment in her amicus brief filed in the Harvard-UNC case in August 2022. "Our communities know better than to give into extremist strategist Edward Blum's years-long mission to deny Black, Latinx, Asian American, and other communities of colour equal voting rights and educational opportunities," she stated. To ensure a better and fairer democracy for all, affirmative action needs to be reaffirmed rather than eliminated.

AP

Frank F Islam is an entrepreneur, civic leader, and thought leader based in Washington, DC HT 92 1 The views expressed are personal



DECCAN HEARLD (P-6), 24 JULY 2023

Fill up vacancies in Karnataka varsities

niversities in Karnataka are facing an acute shortage of teaching staff with 75 to 90% of the faculty posts remaining vacant, forcing them to depend on guest faculty. The highest number of vacancies are in the prestigious Mysore University, the first varsity in the state and the sixth oldest in the country. A staggering 407 of its 460 sanctioned teaching posts remain unfilled. This is followed by Karnatak University where 386 of the 600 posts are vacant. While the government had shown great enthusiasm in establishing new universities at the rate of at least one in every district, it has woefully failed in providing the required infrastructure or faculty. In most cases, existing colleges are merely being upgraded as universities without even the basic budgetary allocation to enable them to emerge as centres of excellence. In some of the recently established universities, not even a single academic post has been filled. The Dr Gangubai Hangal Music and Performing Arts University, for instance, has 15 sanctioned teaching posts. All of them are vacant. The situation is no better in the Dr B R Ambedkar School of Economics University. According to data furnished in the Council by Higher Education Minister MC Sudhakar, of the 3,987 sanctioned teaching posts in the 32 public universities in the state, 1,846 are vacant. This works out to an overall

vacancy of 46%. As some colleges do not have the luxury of guest faculty, they struggle to complete the syllabus. In some cases, entire subjects are not being taught.

The appointment of guest lecturers has led to an altogether different problem. Last year, about 14,000 of them went on strike demanding regularisation of ser**Up to 90%** of faculty positions are vacant

vice, better working conditions and an increase in their emoluments as they were paid a measly salary. When the government made an attempt to absorb the services of these lecturers, it found many of them unsuitable for their positions.

According to Sudhakar, the vacancies will be filled once the statutes concerning recruitment are approved by the Governor, who is also the chancellor of the universities. The minister's claim that the quality of higher education is not affected by the huge number of vacancies only shows his ignorance of the ground realities. The government should immediately stop the practice of making ad hoc arrangements year after year. Instead, it should ensure that permanent lecturers with the required competence and academic skills are appointed so that the students do not suffer for no fault of theirs. The existing universities should be strengthened first, and the government should refrain from starting new ones unless it can equip them to impart quality education.

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PURSUIT OF INNOVATION

National Research Foundation: Why an excellent idea can go awry

The NRF, conceived by the new education policy, will likely be born soon, and can play a pivotal role in propelling India towards becoming a global leader in knowledge creation, but it may fail for want of adequate resources and autonomy.



FURGAN GAMAR

The much-hyped National **Research Foundation con**ceived by the new education policy will likely be born soon. The Union Cabinet has approved the National Research Foundation (NRF) Bill 2023 to be introduced in Parliament. The Bill is already listed amongst the new Bills proposed to be taken up during the monsoon session.

The Bill seeks to establish an exclusively dedicated agency for funding and supporting research in the country. The idea was mooted in detail by the Draft National Education Policy (DNEP) in 2019 and was carried forward by the National Education Policy (NEP) as approved by the

The Bill also seeks to repeal the Science and Engineering Research Board (SERB) Act 2008. SERB, a statutory body of the Department of Science and Technology (DST), has served almost the same purpose in Science and Technology as NRF is supposed to across all disciplines. This is in deviation from the NEP, which had insisted that the existing agencies, including DST, must continue to finance and support research according to their priorities.

Cabinet in 2020.

NRF is conceived in recognition of the crucial role that investment in research, development, and innovation plays in driving a nation's intellectual and material prosperity. NRF is envisaged as an apex body to seed, grow and promote research by fostering a culture of innovation in universities, colleges, research institutions, and laboratories across the country. NRF would fund outstanding peer-reviewed research, catalyse quality academic research, and create

a comprehensive approach to transforming the quality and quantity of research in India.

It is also expected to facilitate collaboration between industry, academia, government, and research institutions to create a conducive research ecosystem in the country. It is thus likely to develop an interface mechanism for their participation and contribution to research and funding. Critically, the NRF contemplates to democratise scientific research by funding researchers in peripheral, rural, and semiurban areas that have not been receiving adequate research funding.

Placed under the administrative jurisdiction of DST, NRF shall have an empowered Governing Board headed by the Prime Minister as President, the Union Minister of Science & Technology, and the Union Minister of Education as Vice-Presidents. Besides, the board is proposed to have two members from DST, one from Arts & Humanities, and five from industry.

These are major diversions from the original idea, which had envisaged NRF to be independent and governed by an empowered board comprising eminent scientists. With only one member from Arts & Humanities, the research funding for humanities, social science, commerce, management and education will likely be sidelined.

Further, the decisionmaking and administration of NRF has been vested in its Executive Council to be chaired by the Principal Scientific Adviser to the Government of India. This, too, may adversely impinge on research funding in humanities and social sciences that have been clamouring for enhancement in research support for a long time.

Even the scientific community is dismayed about the drastic reduction in the financial support to NRF. The draft national education policy 2019 asserted that NRF must get an annual grant of Rs. 20,000 crore (or

0.1% of the GDP). This was a ommendation.

meagre sum is proposed well-considered and, at the to be shared between the same time, pragmatic and government, industry and private philanthropic contrieasily implementable recbutions. The private sector is required to contribute Rs The recommendation had emanated out of the 36,000 crore, whereas the concerns that India was assistance of the central govspending merely 0.65% of ernment would be confined its GDP on research which to Rs14,000 crore over five compared quite poorly with years which would effectivethe spending in the USA ly mean an annual contribu-(2.8%), Israel (4.3%), and tion of Rs 2,800 crore. South Korea (4.2%). The As the NRF Bill intends to scientific community had repeal SERB Act 2008 and hoped that an additional subsume the programmes annual investment of 0.1% and activities of SERB into of GDP over a sustained pe-NRF, there is an apprehenriod would one day get India sion that the allocation for reckoned among the world NRF would get further reduced due to the likely leaders. adjustment of the SERB The proposed additional research spending would budget. Given that the annual budgetary allocation take India about 22 years to reach the level of research to SERB is about Rs 1,000 spending by the US and crore, there is an imminent apprehension that the budnearly 37 years to become at par with Israel or South getary allocation to NRF Korea. may get limited to Rs 1,800 crore to 2000 crore. Despairingly, the NRF will now receive an annual The co-funding model, amount of Rs 10.000 crore

subject to a maximum of Rs 50,000 crore over the next five years. Even this

Editorial Director: Prot M.D. Nalanat, Manaping Editor, Pankai Vohra, Editor, Basil Printed and Published by Rakesh Sharma for and on behalf of Good Monning India Media, Pvt 1 td., Printed at Good Monning India, Media, Pvt 1 td.



with contributions from the government and industry. may sound good in theory but may not materialise anytime soon. It is good to have a provision built into the scheme of NRF, but relying upon the industry to contribute more than two and a half times the government contribution is far-fetched.

The new education policy emphasised that India, Mesopotamia, and Egypt have had a rich historical tradition of promoting science, mathematics, and arts. It also implied that significantly enhancing research spending and building a conducive research ecosystem can help India reclaim its legacy and assume a leadership position, truly a Vishvaguru.

Funding is crucial in promoting research and innovation and constitutes a necessary condition for pushing a country into the next higher orbit. In the era of the knowledge economy, investment in research leads to economic growth, prosperity and security of a nation. India cannot afford to behave miserly on this count.

The idea of NRF presents

an opportunity for the nation. But the idea must go beyond establishing one more new institution or replacing one institution with another. The idea was conceived as a complete package and must be delivered to mark a significant milestone in the nation's pursuit of scientific excellence and innovation.

With its broad mandate. collaborative approach, and focus on funding, the NRF has a huge potential to empower researchers, foster a culture of research and innovation, and address critical challenges facing India and the world. NRF can play a pivotal role in propelling India towards becoming a global leader in knowledge creation and technological advancement. But it may fail for want of adequate resources and autonomy.

Furgan Qamar, former Adviser for Education in the Planning Commission, is a Professor, Department of Management Studies, at Jamia Millia Islamia, New Delhi. Views expressed are personal.

Khasra No. 29 Villano Rasai Brahundin Nanar Gautam Ruddha Nanar Noida Hitan

Repositories of knowledge

Alongside showcasing country's rich cultural heritage, history, art, and scientific advancements. museums can serve as excellent educational resources offering experiential learning for students



HARSHA BHARGAVI PANDIRI

Multi-sensory engagement involving sight, touch, sound, and smell, enhances children's understanding by providing different channels for processing and comprehending concepts

useums in India are essential for school education, as they provide valuable learning experiences and showcase cultural heritage. They collaborate with schools and educators to develop curriculum-aligned virtual learning programmes. However, challenges like inadequate digital infrastructure, literacy, accessibility, and funding, hinder effective virtual learning. Building partnerships with institutions and government bodies is crucial for expanding virtual learning initiatives and maximizing the impact.

A teaching tool

Museums are powerful teaching tools that provide an authentic learning environment, visual and sensory stimuli, experiential learning, and multi-disciplinary connections. They engage students with real artifacts, specimens, artworks, and historical objects, deepening their understanding and knowledge. Museums also offer interactive exhibits, workshops, guided tours, and group activities, promoting active participation and exploration. They provide a contextual framework for learning, encouraging critical thinking, analysis, cultural understanding, and empathy. Independent learning and research are possible through museums, which promote autonomy, information literacy, and research skills. By leveraging these unique attributes, teachers can enrich students' learning experiences, fostering curiosity, critical thinking, and a lifelong love for learning.

Helping children to learn concepts

Museums play a crucial role in supporting children's learning of concepts by offering tangible experiences. These experiences include concrete examples, hands-on exploration, visual representation, multi-sensory engagement, contextual learning, interactive learning, integration of multiple concepts, and personal relevance. Con-



Museums provide a contextual framework for learning — encouraging critical thinking, analysis, cultural understanding, and empathy

crete examples, such as in science museums, provide real-life equivalents of abstract concepts, making them more accessible for children. Hands-on exploration allows children to manipulate objects, conduct experiments, and observe cause-and-effect relationships, promoting a deeper understanding of the concepts. Visual representations, such as displays, models, diagrams, and multimedia presentations, help children understand and retain information more effectively.

Multi-sensory engagement involving sight, touch, sound, and smell, enhances children's understanding by providing different channels for processing and comprehending concepts. Museums also provide context for learning concepts, allowing children to explore exhibits related to specific historical periods, cultural traditions, or scientific phenomena. Interactive learning through asking questions, solving puzzles, and participating in simulations, promotes engagement, critical thinking, and problem-solving. skills. Museums also present concepts in an interdisciplinary manner, allowing children to observe how different concepts from various subjects intersect and relate to one another. fostering a holistic understanding of the interconnectedness of knowledge and encouraging cross-disciplinary thinking. Personal relevance, which connects concepts to real-world applications, motivates children to engage with the concepts more deeply and apply them in their lives. Overall, museums provide a rich learning environment that supports concept learning and fosters a lifelong love of learning. **Museums in India** India boasts of numerous

museums that showcase its rich cultural heritage, history, art, and scientific advancements. Notable museums include the National Museum in New Delhi, the Indian Museum in Kolkata. the Victoria Memorial Hall in Kolkata, the Chatrapati Shivaji Maharaj Vastu Sangrahalaya in Mumbai, the National Gallery of Modern Art in New Delhi, the Salar Jung Museum in Hyderabad, the Indian Museum of Contemporary Art in Mumbai, the Government Museum and Art Gallery in Chandigarh. and the National Rail Museum in New Delhi. These museums provide unique insights and indepth knowledge in specialized areas, allowing visitors to explore and understand the chosen topic. Challenges

Museums in India face challenges in delivering effective virtual learning due to inadequate digital infrastructure, varying digital literacy levels, accessibility, content adaptation, interactivity, teacher training, connectivity issues, copyright and licensing, security and privacy, funding, and resources. Building successful partnerships with educational institutions and government bodies is crucial for expanding the reach of virtual learning initiatives and maximising their impact. Addressing these challenges and finding innovative solutions can lead to meaningful and enriching virtual learning experiences for school students in India.

Indian museums and effective learning

Indian museums offer various initiatives and programmes to support children's learning, including educational programmes and workshops, activity sheets and guides, interactive exhibits and displays, storytelling and performances, collaborations with schools and educators, digital learning resources, and dedicated children's sections or activity zones. These programmes aim to engage children in interactive and hands-on learning experiences related to the museum's collections, spark curiosity, encourage critical thinking, and promote a lifelong interest in art, culture, history, and science.

Individual museums provide age-appropriate questions, puzzles, and tasks to encourage children to explore and interact with the exhibits. Interactive exhibits and displays allow children to touch, play with, and interact with artifacts or displays. providing a hands-on learning experience. Storytelling and performances help children develop a connection with the subject matter and foster imagination and creativity.

Indian museums collaborate with schools and educators to develop educational programmes that align with the school curriculum, offering specialised tours, workshops, and resources that support classroom learning and enhance children's understanding of specific topics. Digital learning resources, such as virtual tours, online exhibits, educational videos, and downloadable resources, enable children to explore the museum's collections at their own pace, even when physical visits are not possible.

Private museums in India

India has several private museums, each contributing to the preservation and promotion of its cultural, artistic, and historical heritage. Notable private museums include the Kiran Nadar Museum of Art in New Delhi, the Devi Art Foundation in New Delhi, the Dr. Bhau Daii Lad Museum in Mumbai. the Calico Museum of Textiles in Ahmedabad, the Museum of Goa, the Navjivan Trust in Ahmedabad, the Indian Music Experience in Bengaluru, and the Palar Centre for Learning in Chennai. These museums play a vital role in enriching the cultural landscape of India by providing platforms for artistic expression, historical preservation, and educational engagement and contributing to the appreciation and understanding of diverse facets of Indian culture and heritage.

Lesson plan for teachers

A teacher can introduce students to the subject's history and significance through a virtual museum gallery experience. The lesson includes 60-minute class periods, presentations, discussions, and hands-on activities covering various subjects for 4th to 10th graders.

Conclusion

Museums are essential educational resources that provide unique learning experiences, foster critical thinking and cultural understanding, and enrich classroom instructions. Indian museums, showcas ing the country's rich cultural heritage, history, art. and scientific advancements, provide meaningful and effective learn ing experiences for children By focusing on specific subjects. these museums offer a comprehensive understanding of India's rich cultural hentage

The writer is Assistant Diretor on deputation with National Gallery of Modern Art Ministry of Calture New Delha Views expressed are personal 2013/17

Education 4.0: Learning in the age of technology



BIJU DHARMAPALAN

In addition to their degrees, students must seek job opportunities to gain work experience, develop teamwork and communication skills

ducation is not the same as it used to be a decade Jearlier. After the covid-19 pandemic technology has infiltrated the day-to-day life of humans and the education sector is no exception. The children born during the pandemic are so addicted to. technology that we can see small toddlers opening the smartphones of their parents and watching their favourite cartoons and songs. Even for taking food and sleeping these kids needs smartphones. A small kid in the class 1st or 2nd can learn new languages simply by using certain apps or youtube, without the help of teachers or parents. In such a situation the current mode of education may be insufficient for the children of today. We can see a technological gap between presentday teachers and children. The traditional model of teaching and learning was replaced with a networked one in which each student has a direct line to a wide range of resources online.

Education 4.0 is a term that refers to the latest phase of education evolution driven by technological advancements and changes in the



global landscape. The concept of Education 4.0 is closely tied to the Fourth Industrial Revolution, characterized by the integration of digital technologies into various aspects of society, including education.

Education 4.0 fosters a peer-to-peer learning environment, enabling students to collaboratively learn from one another, a project-based approach. Teachers take on the role of facilitators, while the curriculum prioritizes a diverse range of 21st-century skills. These skills encompass problem-solving, critical thinking, creativity, people management, teamwork, emotional intelligence, judgment and decision-making, service orientation, negotiation, and cognitive flexibility. The transition to this manner of working will also necessitate students to learn how to adjust rapidly to new scenarios they may encounter in their changing careers.

Project-based learning approach emphasises the value of learning a diverse collection of abilities that can be used in any situation, as opposed to focusing on a set of skills that are directly related to a certain professional role. The new learning approach encourages students to engage in active learning by using laptops and whiteboards to solve problems, participate in real-time guizzes, and collaborate with their peers to enhance their understanding. The ultimate goal of implementing the new methodologies is to put students at the centre of the educational process, "shifting the focus from teaching to learning." By utilizing data and tracking student performance, universities will be able to identify struggling students and provide optimized learning strategies.

Education 4.0 embraces the advancements in analytics to cater to the individual learning needs and goals of each student, recognizing that everyone learns differently. One innovative idea under consideration is the concept of entirely customizable degrees, allowing students to choose modules from various programs.

In addition to their degrees, students may seek job opportunities to gain work experience, support themselves financially, and develop essential skills like teamwork and communication, better preparing them for their professional journeys. Moreover, this approach to education will also lead to a shift in how exams and assessments are conducted, moving away from the traditional approach of memorizing and regurgitating large amounts of information, which may be less relevant in the future. Instead, the focus will be on assessing and nurturing essential skills that are vital in the modern world. While some remain sceptical about this departure from the traditional degree structure, the new approach is likely to produce adaptable and wellrounded graduates capable of thriving in diverse career paths-an invaluable asset in the future job market.

(The writer is an educator)

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The University of Kerala researchers develop visible blind solar cells

BIJU DHARMAPALAR

I wards sustainable energy solutions, a team of researchers at the University of Kerala has achieved a major breakthrough by developing 'visible blind' solar cells. These cutting-edge solar cells have the remarkable capability of harnessing solar energy from both visible and ultraviolet (UN) light, opening up new possibilties for remevable energy generation.

All humans are constantly exposed to the sun's harmful UV rays because they are present in the sunlight that reaches earth's surface. Ozone, water vapour, oxygen, and carbon dioxide in the upper atmosphere absorb UV radiation in two of its three forms (UVA, UVB, and UVC) from the sun. More than 95per cent of the Sun's UV radiation falls into the third category, UVA, which consists of radiation with wavelengths between 315 and 400 nm. The higher atmosphere does not absorb these wavelengths, thus they make it to earth's surface. The relatively long wavelength of UVA and UVB rays allows them to penetrate deeply into the skin, causing rapid tanning after even bnef exposure. Constant exposure to these rays also speeds up the ageing process and deepens winkles in the skin. Humans ate exposed to higher UV levels because reflected light from many surfaces increases that exposure Less than 10per cent of incident UV radiation is reflected by grass, soil, or water, however, hetween 15per cent and 25per cent is reflected by sand and 25per cent is reflected by sea foam. A person & UV exposure is approximately doubled when standing in freshly fallen snow because of how well it reflects the sun's rays. Skiers should always wear UV protection clothing because of the risk of snow blindness

How is tapping this UV for producing electricity' visible blind solar cells also known as ultraviolet (UV) solar cells of UV photovoltaic cells, are photovoltaic devices that can gener-



Dr R Jayakrishnan (3rd from left) along with his team

ate electricity from ultraviolet light while being insensitive or less sensitive to visible light. Unlike conventional solar cells that primarily capture vislike light, these specialized solar cells are designed to harness energy from the UV spectrum.

UV photodetectors (PD) based on photoconductance are thought to be potential prospects for practical applications. This is because an increase in photoresponse occurs when the resistance of the active semiconducting material decreases as a result of the absorption of incident light. On the basis of the photovoltaic effect. PDs that generate their own power are able to execute the transformation that converts signals from optical mode to electrical mode, in other words, they do not require the use of any additional electricity because they are able to function using the power that is piovided by the light source that is incident upon theor. Self-powered photodetectors offer greater flexibility than then battery-dependent to uniterparts due to the fact that they do not require power from an external source. There are several different types of interfacial features that can be used to classify self-powerd PDs, including the p—n junction, Schottky junction, and photoelectrochemical (PEC) type.

Visible blind solar cells typically utilize materials with a bandgap optimized for UV absorption, allowing them to efficiently convert UV radiation into electricity. The bandgap is the energy range that determines the type of light a material can absorb. By selecting materials with a narrow bandgap, the solar cells can be made more sensitive to UV light while being less responsive to visible light.

A team of researchers, led by Dr R Jayakrishnan, Akhil M Anand, from the University of Kerala, has successfully developed a self-powered UV photodetector using economically and environmentally friendly maternals. The device architecture consists of a self-assembled CuO (cupic oxde) thin film on a flexible Cu (copper) substrate as the photocathode and a ZnO (zinc oxide) thin film on the FTO (Fluorinedoped Tin Oxide) substrate as the photoanode. These films were grown using wet chemical synthesis followed by the spin coating technique.

To enable UV-powered PEC cell operation and serve as a self-powered Visible blund' UV photodetector, the researchers used KOH (porassium hydroxide) electholyte for charge transport in the device architecture. This approach eliminates the need for expensive materials like Pt (Platinum) and/or 12 (iodine) to quantify its technological sustainability.

The study findings demonstrate that the CuO layer enhances the device's responsivity and external quantum efficiency without affecting its 'tisble blind' characteristic. This indicates that electron-hole pair circation occurs only in the ZnO layer, while the role of the CuO layer is huned to driving the charge carriers across the junction. In PPC cell operation under UV affinitiation intensity of 12

uW/cm2, the optimized device struc ture yields an open circuit voltage of 0.75 V: a short-circuit current density of 1.11 uA/cm2, and a photoconversion efficiency (PCE) of approximately 4.5per cent Moreover, when operated as a self-powered visible blind UV photodetector, the optimized device exhibits an impressive DN/OFF ratio of 505, photosensitivity of approximately 3433per cent. a responsivity of about 84 mAW-1, and an excellent incident photon to the current conversion efficiency of approximately 30per cent at 360 nm Overall, this research represents a significant milestone in the realm of heterocuntactZnO/CuObased multifaceted devices capable of functioning as UV powered PEC cells or as self-powered UV photodetectors.

"Though it uses Copper as its backbone maternal i was surprised to see that there is no current from Copper in this cell presently. We have developed a single cell prototype and also a rinni-module prototype, and to make it a commercially viable product we need to hit an efficiency above 10 pet cent ", says Dr.Jayakrishnan. The technologi is leadfree and uses oudes of rain and copper which are not hazardouis. Both of them are earth-abundant maternals and hence could deliver economically viable and environmentally berugn alternatives to the current market leaders.

The cell has its limitations in needing to replace the electrolyte after sustained operation, the cost of which can be offset because of the use of a wet chemical synthesis route at room temperature for the growth of the entire device. The use of a room temperature process is a major achievement which eliminates the need for high-end equipment and brings down the overall recurring cost of the technology manifolds lower, relative to the Sushcont or perovskite cell technology. The findings of the research are published in the Journal of Materials. Science, published by Elsevier.

The author is a science communicator and an adjunct faculty at the National institute of Advanced Studies, Bangalore

NEP will play a pivotal role in propelling India

s the National Education Policy (NEP) 2020 completes three years of implementation this week, it stands as a milestone in India's pursuit of universal access and quality education. The policy has encompassed diverse aspects of equitable education, assessment reforms, teacher empowerment and technological integration, and is proving to be a catalyst in giving India's education system a new dimension and making it an inspiration globally. NEP 2020 brought unprecedented flexibility to the education system and its curricular revamp bridged gaps between different streams and activities, creating a more balanced and integrated educational framework. By introducing the National Credit Framework (NCrF), NEP 2020 empowered learners across levels with increased flexibility. Multiple entry and exit options, assessment frameworks, and multidisciplinary curricula granted students the freedom to

shape their learning paths. In higher education, the implementation of the Academic Bank of Credit (ABC) was a game changer. With 10 million students enrolled, the ABC system has been pivotal in the seamless transfer of credits, ensuring student mobility, and personalised learning paths. This reform has empowered students to choose their

preferred institutions and complete degrees based on their preferences. In IIT Kanpur, for example, the revamped undergraduate curriculum has significant flexibility in programme template with new interdepartmental majors, honours, management track and online courses as open electives. The curriculum also mandates a course on ethics and an increase in credits from social sciences, humanities, environment, economics, and management science. There is an evident shift from mere problem-identifying to finding solutions.

NEP 2020 is helping schools and colleges, too, to become enablers of solution-driven grassroots innovation. The Vidya Amrit initiative is helping students to become problemsolvers, while the 10,000 Atal Tinkering Labs and the Smart Indian Hackathons are grooming the next generation of young innovators. The striking correlation between the policy and aspects of Education 4.0, which prioritises inclusivity and skill-based learning, and aims to transform teachers from mere educators to collaborators and enablers, is noteworthy. The DIKSHA (Digital Infrastructure for Knowledge Sharing) platform, hosting nearly half-a-million collections of e-content in 33 Indian languages, including Indian sign language, has catered to 150 million students, teachers, parents, and other learners nationwide.

NEP 2020 recognises the transformative potential of Artificial Intelligence (AI), and remote learning platforms in enriching academic excellence and skill development of students. The integration of AI through personalised learning, automated grading, and improved teacher-student interactions, is a big push for the Indian education system. The AI for All platform, educating millions in 11 regional languages, demonstrates its broad reach. The policy's emphasis on the formation of a digital university that focuses on personalised learning experiences and content availability in various Indian languages and ICT formats, is noteworthy. The upcoming National Digital University, operating under a networked hub-spoke model, will integrate cutting-edge ICT expertise and collaborate with public universities and institutions nationwide.

NEP 2020 acknowledges the role of research and innovation in driving sustainable growth. The recent approval by the Cabinet for setting up the National Research Foundation (NRF) will foster collaborative research and development endeavours among academia, industry, and the government. NEP 2020 has brought a paradigm shift in entrepreneurship and skill development

among students. IITs are now leading in providing credit-based entrepreneurship opportunities to students. Various IITs are either giving semester breaks for entrepreneurship or have integrated it as part of curriculum. At IIT Kanpur, we have a student entrepreneurship policy, where pupils can launch entrepreneurial ventures either by taking a semester off or by opting for Innovation and Entrepreneurship Credits (IEC).

Despite the steady advancements and growth in the past, India's education system was lacking international impact. NEP 2020 opens up a new path with the provision of international collaboration, and the scope to open offshore campuses. The establishment of the first offshore IIT campus in Tanzania marks a significant development in this regard. This global recognition, especially among the Global South, marks a shift. By embracing a holistic, multidisciplinary, and technology-driven approach, NEP 2020 is set to propel India through a comprehensive academic as well as research-oriented transformation. The policy can play a decisive role in shaping the future of the nation.

Abhay Karandikar is director, IIT Kanpur. The views expressed are personal



Bridging the digital divide: Quality education for all _



TARUN ARORA

By leveraging technology, learners can be provided with the tools and resources needed to thrive in the digital era

Access to quality education is no longer a luxury but a fundamental right in today's rapidly advancing digital age. Education has the power to transform lives, break the cycle of poverty, and empower individuals to reach their full potential. However, a significant barrier exists in the form of the digital divide, where millions of people around the world lack access to the necessary tools and resources to engage in effective online learning.

The digital divide refers to the gap between those who have access to digital technologies and the internet and those who do not.

A study by UNICEF found that 1.3 billion children and adolescents do not have access to the internet at home. The COVID-19 pandemic further highlighted the urgency of addressing the digital divide. Students without access have struggled to keep up with their peers, leading to learning loss and long-term consequences for their future.

A digital knowledge ecosystem recognises the



importance of equitable access to information and strives to eliminate barriers by providing a comprehensive knowledge ecosystem. It empowers learners, 'regardless of their background or location, with the tools and resources they need to succeed.

Extensive digital knowledge ecosystem: The digital knowledge ecosystem offers a vast collection of educational resources, including ebooks, e-journals, research articles, and multimedia content. They cover a wide range of subjects and disciplines, catering to students, teachers, researchers, and lifelong learners.

Customized Learning Experiences: Recognizing that each learner has unique needs, a digital knowledge

platform also provides personalized learning experiences. They use advanced algorithms and machine learning to recommend relevant content based on users' interests, preferences, and academic levels.

Universal Search: Recent findings by Mckinsey reveal that a significant portion of our daily activities, approximately 7.5%, is spent searching for specific information. These remote learning tools play a pivotal role in providing equitable access to education by enabling individuals to perform comprehensive searches across various resources. With the ability to access libraries anytime, from anywhere, and on any device, universal search promotes inclusivity and contributes to the delivery of high-quality education to learners from diverse backgrounds.

Partnerships and Collaborations: Most of these digital knowledge ecosystems also collaborate with educational institutions, governments, and non-profit organizations to extend our reach and

impact. These collaborative efforts are instrumental in developing sustainable solutions that address the unique needs of underserved populations. Through such partnerships, inclusive educational initiatives are implemented, effectively breaking down barriers and promoting equal access to quality education for individuals from all walks of life. By pooling resources and expertise, these collective endeavours pave the way for a more equitable educational landscape.

Single integrated platform: A single, integrated platform provides a seamless user experience, allowing users to access all the information and resources they need in one place. The single sign-on eliminates the need to switch between different systems and platforms, reducing the risk of confusion and time inefficiency. An integrated platform allows for centralized management of all data, making it easier to ensure the accuracy and consistency of information.

> (The writer is CEO $\Re = \begin{bmatrix} 6 & Knimbus \end{bmatrix}$

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AI tools pose threat to research ethics

ABHISEK KARMAKAR

mong the various impediments to the integrity and sanctity of academic research perhaps the most perilous as well as unprecedented challenge is the emergence of Artificial Intelligence (AI) tools like ChatGPT. The rampant use of such AI tools has posed serious threats to research ethics and scholarly honesty. Most importantly, it is notoriously disrupting the eco-system of broader academia that facilitates the pursuit of research, teaching. scholarship and fairness in general. This article is an attempt to explore this potential threat to the sanctity. originality and integrity of research. especially research in social sciences. 1/ Before delving into the implications of ChatGPT in terms of its uses and abuses a brief discussion about ChatGPT is necessary to understand how it works? From where does it fetch information? Why and how does it become the centre of attraction as well as controversy around the world? How has it brought about sea changes in research both from positive and negative perspectives? Are governments around the world prepared to take punitive actions against the abuses of such AI tools in research? Besides academia, what are the sectors that are facing threats due to new conversational artificial intelligence platforms? What if ChatGPT promotes cheating such as plagiarism in research?

The origin of ChatGPT can be traced back to 2018 when its parent organization, a California-based company OpenAI, launched its earliest version. It was followed by ChatGPT-II in 2019, ChatGPT-III in 2020 and the latest version ChatGPT-IV on 30 November 2022. It is designed to generate content such as text, images, videos, simulations, codes etc. It is capable of writing essays, emails, contents, research papers, fiction, math worksheets etc. in no time. For such works, it needs a keyword in written or audio commands to which it responds accurately and efficiently



within a few seconds.

The latest version, ChatGPT-IV is the most advanced in terms of its speed, range and efficiency. It can process 25,000 words at lightning speed with stunningly accurate research skills. It has already been subscribed to by one hundred million new users in two months since its inception, a growth which is unprecedented. GPT-IV is a long leap towards accuracy as it has learnt to be more precise with analysing power to decode images, mimic texts etc. in a human-like language.

Such an enormous leap towards artificial intelligence is capable of bringing about sharp changes in various spheres like the educational ecosystem, movies, animation world, market and technology. Precisely, it has brought about a revolution in using artificial intelligence about which the broader academia has already shown serious concerns as it is directly triggering academic integrity to a huge extent. Responding to prompts like 'keywords' or 'phrases,' it provides stunningly comprehensive content that has caused a dramatic impact on existing knowledge systems.

It is already powering Microsoft's binge search engine; techno-giants like Morgan Stanley Wealth Management are investing in it to build an information system; various online educational companies are using ChatGPT-IV as an automated tutor etc. OpenAl is not alone in this shift. Techno-giants like Google, Meta and Microsoft are investing billions of dollars to build their own Chatbots and Al technology. Recently it has shown tremendous results in a test conducted by the professors of Minnesota University by scoring a grade 'C' which is not an easy task for a bot. Again, it has successfully passed a law examination as well as an examination for an MBA in the USA.

In the existing system of research, various tools or software have been developed worldwide to check plagiarized content, which may be acknowledged for ensuring academic integrity to a good extent. But this revolutionary shift, which experts have dubbed 'tectonic', has posed a serious threat as it is capable of disrupting any existing systems for plagiarism check. The reason behind such concern lies in the mode of functioning of such Al tools like ChatGPT which can provide multiple writing styles, para-phrasing, rephrasing and most noteworthy, its content style can be controlled by the user in multiple ways.

In other words, such AI tools are so sophisticated that they will be able to evade existing tools used to fight plagiarism in research. It is important to note that ChatGPT is neither the maiden AI tool nor is it the first ever designed by the OpenAI company. Before ChatGPT several AI tools available were CopyAI, Writesonic, Kafkai, Copysmith, Pappertype, Articoolo, Copymatic and so on. The question of concern here is - what is different about ChatGPT that has already fuelled rising controversies in the broader academic world?

So why are we so concerned about ChatGPT especially when so many web browsers, search engines like Google, and data reservoirs like Wikipedia have been available since the 1990s? Unlike existing AI tools, ChatGPT is sound in terms of its nature, mode of functioning, efficiency and unbiased content accuracy. It is a large language model (LLM) that can generate human-like texts instantly with stunning accuracy and wisdom in response to prompts and is capable of having cognitive conversations from scholarly perspectives.

The most perilous consequence is that ChatGPT is capable of giving responses in multiple text styles and its artificial intelligence is so sound that it can read the mind and intent of the user and likewise produce text suitable for users in simple or complex writing styles. Needless to say, such different styles have the potential to escape the plagiarism-checking software available in the academic world. Therefore, it will create an ambience of mistrust in academia where honest research by a meticulous researcher may be questioned due to this unprecedented technological revolution, which cannot be wished away amid the wake of the ICT

revolution in this globalized world.

Do governments have enough mechanisms to combat such threats against academic integrity? In response to the mounting unprecedented cheating cases, several universities in countries like France, the USA and India have already imposed sanctions over the use of such AI tools but these are of no serious use at all. Many researchers have even mentioned the name GhatGPT as coauthors for writing their research articles. Till date around 12,000 journals including some of the renowned journals listed in the Nature Group have officially banned ChatGPT to be listed as a co-author. Nonetheless. having failed to cope with the technological advance, these journals have updated their guidelines stating that AI tools can be used to improve the readability and language of the research article, but not to replace key tasks that should be done by the authors, such as interpreting data or drawing scientific conclusions

Al in research work is a revolution and it is non-deniable. Academia in many respects has to embrace such technological upgradation. But the question is what can be done to ensure the sanctity and integrity of academic research? Especially, in a context where a reliable, tested and validated tool to identify the dishonest use of Al tools is yet to be invented.

In the last year, OpenAl has launched another tool named Al-Text-Classifier to identify the difference between Al-produced and humanwritten texts. But again, that is said to be imperfect and yet to be certified by OpenAl as reliable in every case. Here lies the importance of a reliable and punitive policy to combat such challenges for the sake of scientific and cognitive research. A serious and multi-stakeholder endeavour to address this unprecedented challenge and to ensure academic integrity is the need of the hout.

iThe writer is Assistant Professor of Political Science, Calsi Mahavidyalaya, Purba Bardhaman 1

Weighing in on the National Research Foundation Bill

he scientific community in India is abuzz with curiosity and excitement after the Union Cabinet's approval of the National Research Foundation (NRF) Bill 2023 in June this year to "strengthen the research eco-system in the country".

The Bill is to be introduced in Parliament. Once passed, it is to establish an apex body to spearhead research and development, foster a culture of innovation, and nurture a research ecosystem across all universities and colleges in the country.

Simultaneously, the Bill seeks to repeal the Science and Engineering Research Board (SERB) Act 2008, under which the SERB was established as a statutory body of the Department of Science and Technology (DST) to carry out almost the same or similar functions which the NRF proposes to do.

The finer points

The idea of establishing the NRF as an independent foundation to promote and fund research was mooted by the Kasturirangan Committee in 2019 and adopted in the National Education Policy (NEP 2020). Importantly, both documents mentioned, in no uncertain terms. that the institutions currently funding research, such as the DST, the Department of Atomic Energy (DAE), the Department of Biotechnology (DBT), the Indian Council of Agricultural Research (ICAR), the Indian Council of Medical Research (ICMR), the Indian Council of Historical Research (ICHR), and the University Grants Commission (UGC), as well as various other private and philanthropic organisations, would continue to fund research according to their priorities and needs independently.

The list of existing institutions funding research did not separately mention the SERB but there was no indication in the policy document that it would be abolished or subsumed into the NRF. Therefore, the scientific community had assumed that it shall, as a statutory body of the DST, continue to support and fund research as before.

To lend credence to the idea, it highlighted the point that leading research-producing nations had multiple public and private funding agencies; further, there was no reason that India could not stand to benefit from the practice.

The idea of having multiple research funding



Furgan Qamar

is former Adviser for Education in the Planning Commission and a Professor of Management at the Jamia Millia Islamia. New Delhi. He was also Secretary General of the Association of Indian Universities and Vice-Chancellor of the University of Rajasthan and the Central University of **Himachal Pradesh**

Budgetary

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agencies gets further reinforced by the statement that the NRF would coordinate with other funding agencies and work with science, engineering, and other academies to ensure synergy of purpose and avoid duplication of efforts.

The financial outlay

Highlighting the lack of a conducive research ecosystem and underinvestment in research, the Kasturirangan Committee had said that the NRF would get an 'annual grant of Rs. 20,000 Crores (Rs 2 Kharab or 0.1% of GDP)'.

It did not say how long this grant would continue, but it did note that research spending in the country was a meagre 0.65% of GDP compared to 2.8% in the United States, 2.1% in China, 4.3% in Israel and 4.2% in South Korea. It expressed concern that research and innovation spending in the country had declined from 0.84% of GDP in 2008 to 0.69% in 2014.

Against this backdrop, even those who were pessimistic had felt that the proposed annual grant would continue until the research spending in the country reached the level it had been in 2008. The optimists in the community had hoped that it might continue until it reached the level of research spending in the U.S.

The NEP 2020 adopted the idea, but without any specific financial commitment. In the meantime, public and private expenditure on research and development taken together kept sliding to touch 0.64% of GDP in 2020-21 compared to 0.76% in 2011-12.

A Press Information Bureau release suggests that the NRF will have ₹10,000 crore for five years and thus get a total of ₹50,000 crore. Despite the scant details available in the public domain, it shows that the government grant or budgetary support would be at the most ₹14,000 crore while the remainder (₹36,000 crore) is to be mobilised through industry and other private philanthropic sources. This would effectively mean that the NRF would get a maximum annual grant of ₹2,800 crore over the next five years, a mere 14% of what the Kasturirangan Committee had recommended.

Following the repeal of its Act, the SERB will be subsumed into the NRF. The SERB was established as a statutory body of the DST to plan, promote and fund internationally competitive research in emerging areas of science and engineering. The SERB has been instrumental in building a sustainable research ecosystem 'through a diverse programme portfolio that includes grant funding, fostering young researchers, recognising and rewarding research excellence, promoting scientific networks and partnerships, and enhanced gender and social inclusiveness'.

Budgetary allocation for the SERB had steadily increased from ₹200 crore in 2011-12 to ₹1,000 crore in 2018-19. Since then, allocation declined to ₹742 crore in 2020-21, but again rose to ₹911.46 crore in 2021-22. SERB programmes, schemes and activities have been important in financing basic research in science and engineering, and most of them will continue under the NRF with some tweaking and tinkering.

It is hoped that the budgetary allocation for the NRF will not be reduced by the amount allocated for the SERB. Experience shows that when schemes are merged or subsumed into a new scheme, the allocation for the new scheme is generally lower than the total for the discontinued schemes.

Greater relevance now

The criticality of research and knowledge creation and the importance of enhancing funding for research has been amply highlighted by the New Education Policy. It insists that the economic prosperity of many developed countries, now and in the ancient past, can be attributed to their intellectual capital and to their fundamental contributions to new knowledge in science, arts and culture. It cites India, Mesopotamia, Egypt and Greece as examples.

The NEP argues that a robust research ecosystem acquires greater importance now due to growing challenges in the world and opportunities due to technological advancements.

The policy asserts that India has had a long tradition of research and knowledge creation in science, mathematics, art, literature, phonetics, language, medicine and agriculture, which needs to be strengthened to make India a leader. These are laudable ideas and intentions, but need to be backed by ample financial support, at least to the extent the Kasturirangan Committee had insisted upon.

A prescription to curb caste bias on campuses

raft of unfortunate suicides by students from marginalised communities in elite institutions over the past year, including the latest incident at IIT-Delhi, has underlined a failure by the authorities in developing an appropriate policy to deal with the discrimination and humiliation faced by pupils from the Sched-uled Caste (SC) and Scheduled Tribe (ST) groups. This laxity is both systemic and longstanding, spanning several administrations, prompting the Supreme Court to now wade into the matter. On July 6, the top court started hearing a petition by the mothers of Rohith Vemula, who died by suicide at the University of Hyderabad in 2016 after months of alleged caste discrimination, and Darshan Solanki, whose death earlier this year at IIT-Bombay sparked protests. The top court asked the University Grants Commis-

sion (UGC) to detail the steps taken to deal with caste discrimination on campuses and gave it four weeks to respond. UGC, in turn, defended itself by citing the presence of the UGC (Promotion of Equity in Higher Educational Institutions) Regulations, 2012, aimed to check caste discrimination in educational institutions.

The UGC (Promotion of Equity in

Higher Educational Institutions) Regulations, 2012 identifies about 35 behaviours of "high caste" students, teachers and administrators as discriminatory and requires universities and colleges to set up an equal opportunity cell and institute an anti-discrimination officer. But the 2012 regulation has not been implemented by a majority of the educational institutions as they weren't made mandatory, and some are not even aware of it.

The question is this: Why is it that despite scores of tragic suicides, many by SC/ST students, the authorities appear reluctant to act? The authorities took great urgency to deal with the appalling problem of ragging, which has been largely curbed in higher education institutions over the past decade due to proactive action by university authorities and strict implementation by the police. In the case of discrimination, however, that sensitivity appears to be lacking, as is the positive willingness to do so.

There are three main steps that need to be taken to minimise the menace of caste discrimination in education institutes, if not eliminate them altogether.

THE AUTHORITIES TOOK GREAT URGENCY TO DEAL WITH THE PROBLEM OF RAGGING, WHICH HAS BEEN LARGELY CURBED DUE TO PROACTIVE ACTION BY UNIVERSITIES AND STRICT IMPLEMENTATION BY THE POLICE. IN THE CASE OF DISCRIMINATION, HOWEVER, SENSITIVITY APPEARS TO BE LACKING, AS IS THE POSITIVE WILLINGNESS TO DO SO First, draft an act that will treat caste discrimination on campuses as a criminal offence, followed by a teaching course to sensitise the students in universities and colleges on the problem of discrimination and inequality. Accompanying these should be remedial academic assistance programmes, equal opportunity cells, and anti-discrimination offices as required under the 2012 regulation. These should be made mandatory, and not optional.

The act should make the 35 actions already listed in the 2012 regulation — this includes breaching the reservation policy, treating SC/ST candidates unfavourably during admission tests, verbally mentioning the castes and communities of marginalised candidates in class, making derogatory remarks about some groups, or segregating marginalised community students in hostels, messes

and playgrounds — criminal offences and bring them under the ambit of the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 2015.

Second, the compulsory teaching course should educate and sensitise students about the problem of discrimination and inequality in Indian society. Orthodox values, contradictory to the provision of non-dis-

crimination in the Constitution and laws, continue to shape the behaviour of our children in their formative years through socialisation in the family and society, and are reflected in their behaviour towards SC/ST communities on campuses. It is urged that children unlearn these undemocratic values. This sensitisation can achieve what mere enforcement of the law cannot. BR Ambedkar, too, was aware of the limitation of the law and the need for sensitisation. "Law can punish a single solitary recalcitrant criminal. It can never operate against a whole body of people who are determined to defy it. Social conscience is the only safeguard of rights. If social conscience is such that it recognises the rights which the law chooses to enact, the rights will be safe and secure," he said.

Bringing students face-to-face in the classroom and initiating open discussions can enable them to minimise stereotypes and learn to respect each other's differences.

Third, institute remedial academic assistance to the students who lag behind. The policy of remedial coaching is not new, but is unfortunately not taken seriously by education institutions. To make it more effective, UGC should pass regulations to make the programme compulsory to improve a student's grasp of English and core subjects. This will assist students in improving academic performance and dealing with psychological pressure. And finally, the updated regulation should include a provision for the establishment of equal opportunity cells and anti-discrimination officers who can implement the regulation. These offices, too, exist, but are only half-heartedly implemented by institutions. It is high time the government take immediate steps to assure the Supreme Court, and work to forestall the unfortunate deaths of young minds who have worked their way through impossible odds, and deserve in their universities, a nurturing and supportive space

Sukhadeo Thorat is former chairman, UGC. The views expressed are personal



Jamia admitted students to 20 courses through CUET, says V-C

HT Correspondent

letters@hindustantimes.com

NEW DELHI: Jamia Millia Islamia has this year admitted students to 20 courses — 15 undergraduate programmes and five postgraduate programmes — on the basis of their Common University Entrance Test (CUET) score, up from the 15 programmes under the ambit of the centralised entrance exam, vice-chancellor Najma Akhtar said on Thursday.

Among the 20 courses for which students were admitted on the basis of their CUET score are popular courses such as BA (Hons) History, BSc (Hons) Physics, BSc (Hons) Chemistry, MA (Persian), and MA (Sanskrit).

Speaking at a press conference, Akhtar said, "It was not mandatory for us to admit students through CUET, so we decided to start with a few courses. Last year, there were



glitches in the exam. This year, it was successful implemented. We might consider implementing it for other courses as well from next year." Akhtar said that the varsity will soon adopt the fouryear undergraduate programme.

The V-C said Jamia's admission process takes place before CUET. "Classes for other programmes have started since July 17. Since CUET was delayed, the admissions were delayed for

It was not mandatory for us to admit students through CUET, so we decided to start with a few courses.

NAJMA AKHTAR, V-C, Jamia Millia Islamia

these courses... Classes will commence soon."

A Jamia official said 140,000 students applied to the university for the 269 undergraduate, postgraduate, diploma, and certificate courses that the varsity offers. The official did not share the number of seats on offer at the university. Students for most of these courses have been admitted through the varsity's usual entrance test procedure. Akhtar also said that a medical institute will soon be set up inside the campus on a publicprivate partnership (PPP) and admissions will take place through NEET.

She said, "I had been working on the medical college for some time... Now we have finally received the approval from the Centre... We will be partnering with an organisation under the PPP mode. We are on the lookout for such a deal."

An under-construction building inside the campus will be considered as a location for the institute. "We will start with 150 seats and then increase the number of seats." Akhtar said. She said talks are also on to have a hospital affiliated with the varsity, but is likely to be outside the campus. Akhtar also announced that Jamia is in the process of establishing an overseas campus. "This is still in its planning stages," she said.

Inculcating a culture of reading



A civilization that reads, thinks and pushes forward fresh ideas, requires easy access to books and reading materials, whether in print or digital space



ne of the most fascinating aspects of reading is its ability to transport us to places we've never been, know people we can never meet. I remember vividly how, as a child, I found joy in my books during times of melanjoy in my books during times of melan-choly or happiness or any free time. As I turned the pages, I could feel the wind on my face as I soared through the skies with the birds or meandered through the mysterious streets of far-off lands, laugh-ing or crying with the characters I loved. The characters in these stories became mw The characters in these stories became my friends, their triumphs and struggles

But reading isn't just about stories or fantasy; it is a window into wisdom and knowledge. It is the ultimate superpow-er. Within the pages of a book lie the secrets of the universe, the history of civilizations, and the musings of brilliant nitizations, and the intering of brinning minds. As we read, our minds expand, our perspectives broaden, and new ideas take root. It is through reading that we can learn from great philosophers, understand the complexities of human nature, and make sense of the world around us, Books and reading play a vital role in shaping the life of an individual.

Reading gives freedom to the mind and opens up avenues for knowledge, imagination, and information, thus contributing to the making of a well-round-ed human being. It not only helps in the improvement of language—rather this is just the tip of an iceberg for what reading can achieve for the individual, society, and the policymakers. Its impact oper-ates in a multi-layers manner. It improves vocabulary, increases awareness, develops critical and analytical thinking as well as enables us to broaden our horizons towards various aspects of life. Introduced to children at a very

young age, it initially acts as a medium of



THE CHALLENGE IS TO MAKE AVAILABLE APPROPRIATE BOOKS AND READING MATERIALS ACCESSIBLE AND AFFORDABLE TO ALL CHILDREN IRRESPECTIVE OF AND SOCIAL

(Archna is from joint Secretary School, Education and Literacy & Yuvraj is the director

STATUS

National Book Trust)

education and eventually nurtures

ideas, giving shape to the mind. In today's fast-paced world, where information bombards us from all sides, taking the time to read can feel like a luxury. But let us not forget the immense joy that comes with immersing ourselves in comes with immersing ourselves in a good book. The joy of feeling the weight of a novel in your hands, the anticipation before flipping the first page, and the satisfaction of turning the final one. It is a moment of pure bliss, a reminder of the power of the written word and its ability to ignite a spark within our souls. All intellectuals and famous people have talked

within our souls. All intellectuals and famous people have talked about this joy of reading. "Books Are My Favourite Friends, And I Consider My Home Library, With Many Thousand Books, To Be My Greatest Wealth." Dr APJ Abdul Kalam Prime Minister Shri Narendra Modi once underlined, "When citizens read, the country leads." Aligned with his thoughts, the

Aligned with his thoughts, the National Education Policy (NEP) 2020 focuses on a knowledge-based society and the creation of THEIR LOCATION global citizens with global values

and perspectives. It reflects the necessity to acquaint ourselves with the devel-opments taking place around the opments taking place around the world to prepare and work in the direction of becoming a nation of citizens equipped with proper knowledge as well as being com-petent and willing to take chal-lenges. A country with well-read human resources and necessary dills directly contributes to the skills directly contributes to the economic, social as well as cultur-al growth of the country, acting as

the building blocks of development.

A civilization that reads, thinks and pushes forward fresh ideas, requires easy access to books and reading materials, whether in print or digital space. This is now cov-ered as a part of the education reforms

In the past too, campaigns like 'Vanche Gujarat,' which means 'Read Gujarat,' at regional levels created a great impact on the younger generation. This mission was an initiative to inculcate reading habits and a culture of booking nabits and a culture of book-mindedness in society. In one of the speeches by the PM, he had urged the public to replace bou-quets with books while greeting people, suggesting how this would make a huge difference in their lives

However, the challenge is to make available appropriate books and reading materials accessible and affordable to all children irrespective of their location and social status. The digital accessibility of content has provided a new ray of hope to create an even play-ing field for developing a suitable reading ecosystem.

During the presentation of Union Budget 2023, Smt Nirmala Sitharaman, Union Minister of Finance, announced setting up a National Digital Library for children and adolescents to "facilitating the availability of quality books." In addition, the creation of a physical library at the panchayat level to give access to a digital library has also been announced. In continuation of this, the National Book Trust, India, and similar other sources will be encouraged to publish suitable books for these libraries as well as promote reading habits across the country with a special focus on providing non-curricular titles in regional languages and English, making up for the loss of learning during the pandemic. For a society to be inclusive

and progressive, it is important to be educated and not just literate. Books can contribute to one's life without even making the individ-ual realize the extent of their effect on them. How just picking up a book to read can change lives, transform thoughts, and develop

It provides a wide array of scope to explore and ponder over facts, stimulates the brain and helps one grow mentally and emo-tionally. Metaphorically, books can be considered like an open door, which takes us into a whole new world filled with endless pos-

sibilities and opportunities. In this context, the role of the National Digital Library (NDL) is significant. Being set up by the Ministry of Education, the NDL project seeks to develop a framework of a virtual repository of joy ful reading resources with a device-agnostic single-window search facility. Albert Einstein rightly said, "The only thing that you absolutely have to know is the location of the library

The National Digital Library can help us realize this in a better way, as one can read in it on any device, whenever and wherever the children want. Ah! The joys of reading may be experienced by all.

Once Again, A Knowledge Hub

Union education minister, writing on the occasion of NEP's third anniversary, argues the policy is geared to making India the epicentre of emerging technologies

Dharmendra Pradhan



Knowledge is power. India's rich knowledge capacity is evident in the Vedas and Upanishads, serving as vast sources of wisdom for centuries.

With our ancient Indian universities such as Nalanda and Takshashila, India has been an international knowledge hub of the past.

India's knowledge and wealth have attracted many, including the Mughals, Mongols, British, Dutch and Portuguese over various periods of history. Down the years, significant knowledge also stood destroyed. But the loot could not defeat gurus and yogis who carried forward the traditions of ancient knowledge and wisdom.

While Britain led the world during the second industrial revolution, it was the US that led in the third. Today, as India surpasses Britain to become the fifth largest economy globally, the time is ripe for it to once again become the epicentre of knowledge and lead the world into the fourth industrial revolution, marked by exponential growth in new and emerging technologies.

Amidst these expected changes, in 2014, PM Narendra Modi set forth a vision to transform India's education system into a global knowledge powerhouse of the 21st century. With over 260 million school-going children and over 40 million students in higher education, India's education system is one of the largest globally.

Laying the foundation

After extensive discussions with stakeholders, including the public, the National Education Policy (NEP) 2020 was launched after a gap of 34 years. As we approach July 29, we celebrate NEP's third anniversary with a two-day Akhil Bhartiya Shiksha Samagam – a 'Maha Kumbh' on education.

Three years of NEP have seen significant achievements. For the first



time in India's history, Early Childhood Care and Education is integrated into the formal schooling system, recognising the evidence that over 80% of the child's cumulative brain development happens before the age of eight. Additionally, a play-based pedagogy is emphasised in the development of the first National Curriculum Framework for Foundational Stage (NCF-FS), catering to children aged 3-8. This framework incorporates diverse activities like conversations, stories, music, arts, crafts, games, nature field trips, and interactive play with materials and toys. An exemplar of this approach, the Jadui Pitara (magic box), has been created for schools to adopt.

Textbooks for classes 1 and 2 based on NCF-FS are released, complementing the national NIPUN Bharat Mission to achieve foundational literacy and numeracy by 2026. Around 150 new textbooks will be made available, aligning with the upcoming National Curriculum Framework for School Education and will be developed in at least 22 Indian languages, promoting the vision of multilingual education under NEP 2020. Digital versions of textbooks are being made accessible through PM e-vidya, ensuring equitable and on-demand access. PM SHRI Schools for Rising India representing the true spirit of NEP are also being set up across the country.

Blending vocational and mainstream

NEP 2020 has given special emphasis on vocational education through its integration and mainstreaming with general education. We are creating alignment between Samagra Shiksha and the Skill India Mission to introduce skilling programmes at school level.

Furthermore, a unique National Credit Framework (NCrF) has been introduced that credits formal and informal learning, spanning school, higher, and skill education and training. NCrF enables multiple entry and exit at various levels, allowing students to re-enter the higher education system any time in their life. Credits will accumulate in a student's Academic Bank of Credit (ABC) for recognition.

Technology is enabling students to pursue degree programmes online, offering increased flexibility to learners and enhancing access to quality education, especially in remote areas. Credits can now also be earned through online courses on the SWAYAM portal and soon, a Digital University, one of its kind will be set up in India.

The digital ecosystem for skilling has also been further strengthened with a unified Skill India Digital platform for enabling demand-based skilling, linking with employers, including MSMEs, and facilitating access to entrepreneurship schemes. We are also working on facilitating global mobility of skilled candidates.

To overcome language barriers in learning, many higher education institutions are now offering technical programmes in many Indian languages. AI translation tools are facilitating the translation of textbooks into different Indian languages.

Going global

In the realm of internationalising education, India's institutions are setting up campuses overseas. While IIT Madras is going global with its planned campus in Zanzibar-Tanzania, an MoU to set up IIT Delhi in the UAE was also signed in the presence of the PM earlier this month. Notable foreign universities are setting up campuses in GIFT City in Gujarat.

With about 65% of our population in the working age group, we must create frameworks for an age in which lifelong learning and skilling are expected to become the order of the day.

By emphasising rootedness in India's knowledge systems with an outlook to make global citizens, NEP has the potential to be a guiding philosophy for creating a knowledge-based society anywhere globally, especially for the poor and emerging economies that are looking to break free from the shadows of colonisation.

Student suicides Counselling a must for handling pressure

NDERSCORING the pressure on students to cope with the highly challenging and competitive atmosphere in the country's top professional colleges is the grim fact that 69 students died by suicide in the past five years in

premier institutes such as IITs (31 deaths), NITs (22), AIIMS (13) and IIMs (3), as per data presented in the Rajya Sabha on Wednesday. Of them, 37 were from the reserved categories and 32 from the general category; this shows that students from both backgrounds are almost equally affected by stress. Thus, the contention that caste-based discrimination is a key factor for the suicides is only partially true. Similarly revealing is the fact that these institutes also account for the maximum number of students dropping out: while 8,319 did not complete their courses in the IITs, 5,623 opted out of NITs from 2018 to 2022.

Experts have often pointed out the reluctance of the despairing youngsters to admit to their parents — who generally put everything at stake for their education — that they cannot handle the pressure of studies and that it is pushing them to the brink. Then, there is no guarantee that had they opened up, their parents would have stood by them.

Even as academic stress, mental health and family issues are among the contributing factors, the statistics do cry out for the parents to spare a thought for a likely underlying cause: perhaps their wards' interests lie elsewhere. The initial onus is on them to allow their children to pursue their dreams rather than pushing them to a place that turns out to be unbearable for them. In addition, addressing this grave issue at the institutional level is vital as these youth, who ace tough exams to enter the portals of these colleges, are a promising human resource.

सफलता के संकेत देती नई शिक्षा नीति

के साथ-साथ बहविषयक ज्ञान प्राप्त करने

के परे अवसर उपलब्ध होंगे। खास बात

यह है कि पुरा पाठयक्रम इस तरीके से

विन्यस्त है कि हर वर्ष की पढाई अपने

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आत्मनिर्भर भारत के निर्माण हेतु एनईपी,

2020 कौशल विकास, व्यावसायिकता

और रोजगारपरकता पर बल देती है। डीय इस दिशा में भी पूरी तरह सक्रिय

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करेगा। बहभाषावाद भी शिक्षा नीति का

एक प्रमुख बिंदु है। इस मोर्चे पर भी डीयू

अग्रणी है। संविधान के अनुच्छेद आठ

अनुसरण करते हुए ऐसे वैल्यू एडिशन पाठयक्रम बनाए हैं जिनमें 50 प्रतिशत अध्ययन व्यावहारिक और अनुभवजन्य है। यहां सभी पाठयक्रम क्रेडिट कोर्स है और विज्ञान, मानविकी और वाणिज्य सभी के छात्रों के लिए चार सेमेस्टर पढ़ना अनिवार्य है। एनईपी में रोस्किलिंग अर्थात पुनशिंक्षण की भी बात है। इस संदर्भ में अपनी योग्यता वृद्धि योजना (सीईएस) के तहत डोयू अधिक उम्र वालों को भी प्रवेश देगा जिससे वे स्वयं की योग्यता में वृद्धि कर सकें। अध्यापन-शोध की गणवत्ता बढाने के लिए एनईपी में 'क्लस्टर' की परिकल्पना योजना है। इसमें एक संस्थान के विद्यार्थी किसी विषय या कोर्स पढने के लिए दूसरे संस्थान में जा सकेंगे। इस संदर्भ में भी डीयू ने पहल करते हए विभिन्न कालेजों के लिए 'क्लस्टर' माडल बनाया है।

निःसंदेह, एनईपी के पूर्ण कार्यान्वयन में अभी भी तमाम चुनौतियां शेष हैं। आर्थिक संसाधनों को कमो, आधारभूत संरचना की समस्याएं, शोध एवं विमर्श को भारतीय दुष्टि का अभाव, शोध के अहम पडाव पीएचडी में प्रवेश प्रक्रिया को सीमा, विदेशों विश्वविद्यालयों के साथ समन्वय आदि कई बिंदु हैं, जिन पर गंभीरता से विचार करना होगा। इसके बावजूद समग्रता में देखें तो छात्रों को 21वीं सदी को चुनौतियों के लिए तैयार करने के लिए निर्मित एनईपी-2020 का कायांन्वयन डोयू ने श्रेष्ठ तरीके से किया है। यह अन्य उच्चतर शिक्षण संस्थानों के लिए एक आदर्श सिद्ध होगा।

(लेखक दिल्ली विश्वविद्यालय में डीन योजना एवं एनइंपी सेल के सदस्य है। response@iagran.com

धाराओं के बीच अलगाव की समाप्ति, बहु-विषयकता और समग्र शिक्षा, रटने के बजाय वैचारिक समझ और चरण की तैयारी है।

लचीलापन एनईपी, 2020 की एक प्रमुख विशेषता है ताकि अपनी प्रतिभा एवं अभिरुचि के अनुरूप छात्र पाठ्यक्रम चन सकें। इस संदर्भ में डीयू के नवनिर्मित करिकलम फ्रेमवर्क में छात्रों को न केवल मनोनकल विषय से जुडे पाठ्यक्रम चुनने का अधिकार है, बल्कि सामान्य ऐच्छिक कोर्स में भी वह अन्य स्टीम के कोर्स पढ सकेंगे। यानी विज्ञान वाला छात्र मानविकी से संगीत या भुगोल अथवा कामर्स के मैनेजमेंट या मार्केटिंग का कोर्स पढ सकता है। रुचि के विषय के विशेष ज्ञान



प्रो. निरंजन कुमार निःसंदेह, एनईपी के पूर्ण कार्यान्वयन में अभी भी तमाम चुनौतियां हैं, लेकिन बीते तीन वर्षों के अनुमवों से सीख लेकर आगे की राह आसान बनाई जा सकती है

प्रिधानमंत्री नरेन्द्र मोदी के मार्गदर्शन में २० जन्म शिक्षा नीति (एनईपी) का अवतरण हुआ। नई सामाजिक, आर्थिक और तकनीकी परिस्थितियों से निपटने के लिए बनी इस नीति को देश-दुनिया में सराहा गया। इसके बावजुद, विभिन्न हलकों में इसकी सफलता को लेकर संदेह भी व्यक्त किया गया। ऐसे में, इस नीति के तीन वर्ष परे होने पर इसका लेखाजोखा प्रस्तुत करना आवश्यक है। ऐसा करने से पहले हमें यह समझना होगा कि इस नीति के प्रमुख उद्देश्य और लक्ष्य क्या हैं?

इस शिक्षा नीति के चार वैचारिक आधार स्तंभ हैं। भारतीय ज्ञान परंपरा, महात्मा गांधी का विजन, डा. आंबेडकर का सामाजिक न्याय और आत्मनिर्भर भारत का स्वप्न। इन्हें साकार करने में विद्यार्थी को एक प्रमुख अंशभागी बनाया गया है। नीति के आधारभूत सिद्धांतों विशेषकर उच्चतर शिक्षा के स्तर पर दृष्टिपात करें तो विद्यार्थियों के लिए लचीलापन, शैक्षणिक



में उल्लिखित सभी भारतीय भाषाओं की पढाई डीय में जारी है। राष्ट्र की उन्नति में शोध एवं नवाचार की अहम भूमिका को समझते हुए एनईपी में इस पर बहुत जोर है। इसकी महत्ता को समझते हुए डीय ने शोध एवं नवाचार को स्नातक स्तर पर ही पाठयक्रम का हिस्सा बनाया है।

छात्रों का समग्र विकास मानवीय एवं नैतिक मुल्यों के अभाव में संभव नहीं। पश्चिमी जीवनशैली, तकनीक में सिमटती दनिया, रियल के बजाय वर्चअल लाइफ, शारीरिक खेलकद की जगह गैजेट गेम्स और बढते एकाकोपन आदि ने यवाओं को एक खतरनाक गिरफ्त में लेना शुरू किया है। इसके दुष्परिणाम से आकार लेने वाले असंतुलित व्यक्तित्व समाज एवं देश के लिए अनुत्पादक, बोझ और खतरनाक साबित होंगे। इस समस्या के समाधान के लिए डीयू को मूल्य संवर्धन समिति ने अभिनव पाठयक्रमों तैयार किए हैं। इनमें छात्रों के चरित्र निर्माण तथा समग्र विकास और साथ ही उनमें भारतीय जान परंपरा और मानवीय मुल्यों का सम्यक संचार करने के लिए गांधीवादी पद्धति का 🧔 🌫

Indoor Parks for Breathing in Ideas

In 2020, when the pandemic forced the abrupt closure of schools across India, Karnataka started the 'Oduva Belaku' — the light of reading — programme to ensure students, many of whom had no access to books or online learning systems, don't miss out on learning. Under the programme, it transformed the rural library network by adding new books, study desks, maps, bean bags and plants, and fixing electric connections. The public, especially students, returned in droves. Today, these libraries are safe spaces for children. They come to read, engage and attend computer or career guidance classes. Adults come for newspapers.

The Indian public library movement began in the 1900s when



the first free state-supported library network began in Baroda. Unfortunately, today, the state of public libraries is poor. According to a 2019 ministry of culture study, there are 27,682 public libraries, with the most in Kerala (8,415), followed by Karnataka (6,797), Tamil Nadu (4,634) and West Bengal (2,480). All other states have embar-

rassingly low scores. In such a dismal scenario, GoI's plan to hold a Festival of Libraries in Delhi on August 5-6 is welcome. Hopefully, it will push states to invest in libraries.

The best public libraries in the world are much more than just reading rooms. They are active and democratic spaces of public engagement, a kind of indoor public parks where ideas are breathed in, forming a strong social network and framework. At a time when the country is so polarised and fake news is moving faster than 'real' news, a strong network of public libraries can be more than just a haven for intellectual stimulation. They can be spaces for promoting understanding and appreciation of the 'other' to help build a plural society. DAINIK JAGRAN (P -12), 29 JULY 2023

नई शिक्षा नीति के तीन वर्ष

नई शिक्षा नीति के लागू होने के तीन वर्ष पूरे होने पर इसका आकलन किया जाना आवश्यक है कि शिक्षा व्यवस्था में अभी तक जो सुधार किए गए हैं, वे प्रभावी सिद्ध हो रहे हैं या नहीं? यह भी देखा जाना चाहिए कि जो सुधार किए गए हैं, उनसे अपेक्षित परिणाम प्राप्त हो रहे हैं या नहीं? इसी तरह इस पर भी ध्यान देने की आवश्यकता है कि देश भर के शिक्षा संस्थान नई शिक्षा नीति के प्रविधानों को गंभीरता के साथ लागू कर रहे हैं या नहीं? यह समीक्षा इसलिए की जानी चाहिए, क्योंकि इससे ही नई शिक्षा नीति के उद्देश्यों को समय रहते हासिल करने में सफलता मिलेगी। इसकी अनदेखी नहीं की जानी चाहिए कि नई शिक्षा नीति बनने में अच्छा-खासा समय लग गया। सरकार का यह दावा सही हो सकता है कि नई शिक्षा नीति से जुड़ी 80 प्रतिशत अनुशंसाओं पर आगे बढ़ा गया है, लेकिन प्रश्न यह है कि क्या इन अनुशंसाओं पर सही तरह अमल भी हो पा रहा है? इससे इन्कार नहीं कि कुछ बड़े और नामी शिक्षा संस्थानों ने नई शिक्षा नीति के प्रविधानों को लागू करने में तत्परता दिखाई है, लेकिन अनेक शिक्षा संस्थान अभी भी इस मामले में सुस्त और पीछे नजर आ रहे हैं। कुछ राज्य सरकारें भी नई शिक्षा नीति पर अमल के मामले में उतनी संजग नहीं, जितना उन्हें होना चाहिए। यह ठीक नहीं कि कुछ शिक्षा संस्थान और यहां तक कि विश्वविद्यालय भी अभी पुराने ढर्रे पर ही चलते दिख रहे हैं। वे ऐसी डिग्रियां बांटने में लगे हुए हैं, जिनकी उपयोगिता प्रश्नों के घेरे में है।

चूंकि तकनीक के इस दौर में दुनिया तेजी से बदल रही है, इसलिए शिक्षा व्यवस्था में सुधार की प्रक्रिया को भी तेज किया जाना चाहिए। नई शिक्षा नीति का एक बड़ा उद्देश्य छात्रों के व्यक्तित्व को संवारना और उन्हें भविष्य की चुनौतियों का सामना करने में सक्षम बनाना है। छात्रों को उस कौशल से लैस किया जाना चाहिए, जिनके बिना आज के इस तकनीकी युग में काम चलने वाला नहीं है। वास्तव में कौशल विकास को सर्वोच्च प्राथमिकता मिलनी चाहिए। आवश्यकता केवल इसकी ही नहीं है कि पठन-पाठन की गुणवत्ता को बेहतर बनाया जाए, बल्कि इसकी भी है कि शिक्षकों को इस तरह प्रशिक्षित किया जाए, जिससे वे उन अपेक्षाओं पर खरे उतर सकें, जो नई शिक्षा नीति के माध्यम से की गई हैं। छात्रों की मानसिकता के साथ शिक्षकों के चिंतन में भी बदलाव आना समय की मांग है। यह भी समझा जाना चाहिए कि प्राथमिक से लेकर उच्च शिक्षा व्यवस्था तमाम समस्याओं से दो-चार है। आखिर देश भर के स्कूल और विश्वविद्यालय थोड़े-बहुत बदलाव के साथ एकसमान पाठ्यक्रम अपनाएं, इसके लिए ठोस उपाय क्यों नहीं किए जा रहे हैं? निःसंदेह पाठ्यक्रम में बदलाव को भी प्राथमिकता दी जानी चाहिए, क्योंकि कायदे से तो अब तक यह काम हो जाना चाहिए था। 👎

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Going global can do wonders for Brand IIT, and its rankings

V RAMGOPAL RAO

TATION



The National Education Policy released in 2020 opened doors for India's public funded higher educational institutions to open campuses abroad. IIT Delhi was the first public funded

institution in the country to approach the government in 2020 for permission to open a campus abroad. Now, IIT Delhi and IIT Madras have been granted permission to start their international campuses in Abu Dhabi and Tanzania, respectively. Other IITs may follow suit. This is indeed a historical moment for India with our public funded institutions venturing into foreign shores. Let's examine the benefits IITs can gain from these international campuses, and what needs to be done to leverage this opportunity?

1. Increased diversity: Operating campuses in different countries helps attract a diverse pool of students from various cultural and educational backgrounds. This enriches the learning experience, fosters cross-cultural understanding, and prepares students for a globalised world. It's important, therefore, to not rely on just the Indian diaspora to study in these campuses but rather to attract students of diverse nationalities.

2. International rankings: In this year's QS World University Rankings, our older five IITs received an average of 1.3 points out of 100 for international students and 2.9 points out of 100 for international faculty. This pulls down their international rankings considerably. Given the challenges with infrastructure, admission policies and cultural differences, it's difficult to expect international students to come and study in IITs in India. By having international campuses and offering Bachelor of Science (BS) programs (so as not to dilute the brand value of BTech degrees offered in Indian campuses), there is an opportunity to expand the IIT brand globally and attract more foreign students to its Indian campuses as well. This cross-pollination of talent and ideas can elevate the institution's status and rankings. Another way to improve cultural diversity is to have students in these international campuses spend time on the main campus in India for a minimum period of one semester to a year as part of their curriculum requirements. The enhanced fee charged from these students can help support the infrastructure requirements to host these students. This will also significantly enhance our international rankings.

3. Global reputation enhancement: One of the reasons for the poor showing in international rankings is also because of low perception scores. In the last QS global university rankings, the five older IITs scored an average of 21.9 points out of 100 in the total weighted reputation score. Having an international footprint will help improve perception of our institutions which, in turn, can help our standing in international rankings.

4. Revenue generation: International campuses can add an additional revenue source for IITs. They can charge higher fees, and if properly managed and with



GLOBAL FOOTPRINT: An overseas campus like IIT Zanzibar can boost both reputation and rankings

rules permitting, surplus funds can be reinvested in the main campus back in India, improving infrastructure and academic facilities here.

5. Collaboration opportunities: They can also serve as hubs for collaboration with foreign universities, research institutions, and industries. This facilitates knowledge exchange, joint research projects, and technology transfer, leading to innovations and advancements in various fields.

6. International faculty recruitments: Freed of rigid salary slabs that exist on Indian campuses, these foreign campuses may be able to attract more international scholars as faculty. Main campuses need to utilise this global talent pool. For example, it's well-known that research papers co-authored with international scholars receive twice the number of citations as compared to purely national collaborations.

7. Alumni engagement: Having overseas campuses can strengthen ties with IIT alumni spread across the world. This support can be crucial for funding research, scholarships, and infrastructure development.

8. Addressing brain drain: By offering quality education and research opportunities abroad, Indian institutions can potentially retain some of the top Indian talent that might otherwise have gone elsewhere.

9. Policy influence: Global presence of our institutions can also provide India with greater leverage in shaping policies, both in India and the host countries of their international campuses. This soft power can help improve India's prestige abroad.

However, establishing and maintaining international campuses also comes with challenges such as meeting regulatory requirements, availability of resources, ensuring quality control, and maintaining the institution's core values and standards across all campuses. It's also important not to overdo this. We need to see how the two extension campuses perform before expanding on this model further with other IITs. With careful planning and execution, the benefits can outweigh the challenges, contributing to the overall growth, reputation and global rankings of our institutions.

Prof Rao is former director of IIT Delhi and currently vice-chancellor for the BITS Pilani group of institutions

Sorry state of govt schools

The RTE Act is trying to make private school education accessible while government schools are faring badly

KATHYAYINI CHAMARAJ

Tielding to concerted pressure, the Director of Public Instruction was recently forced to provide to the Karnataka High Court, in the suo motu PIL on out-of-school children (WP15768/2013), the list of schools not fulfilling infrastructure norms as per the Right to Education (RTE) Act 2009. According to the list, it is regrettable that 4,122 schools out of 47,068 still do not meet the RTE norms more than 10 years after the passage of the RTE Act. In all, 745 do not have adequate classrooms, 865 do not have ramps, 1,224 do not have a playground, and 737 do not have a boundary wall. Though it was stated earlier that 464 schools did not have toilets and 87 did not have drinking water facilities, it is claimed after re-verification that only 38 schools do not have toilet facilities and all others have drinking water.

One has to view these numbers in the context of the fact that the RTE norms themselves are not very stringent; for instance, they do not prescribe how many toilets there should be for how many students. Even if there is just one toilet for hundreds of children, it meets the RTE norms, and this one toilet is often kept locked, to be opened and shown as a showpiece only to inspectors!

However, reacting to the report, the Karnataka High Court used strong words about the state of the toilets in government schools. It has said: "The photographs annexed to the said report, least to say, shock one's conscience. In the report of the Government in respect of LPS Kyatandoni Tanda school, it is clearly stated that there is no water facility. Another feature reflected in the report is (more) painful than shocking for us. On perusal of photographs of the government primary Urdu School, the condition of the toilet is pathetic. We can only say that no parent would like to send their wards where such a toilet facility exists. ...It will not be out of place to state that expecting a building as per the standard provided (under the RTE Act) ... would be a distant dream for the parents who are desirous to send their children to

the government schools".

The RTE Act had prescribed that all infrastructure norms should be met within three years of the Act coming into force in a state, and the recognition of a school should be withdrawn if it does not meet the norms after the deadline. The Act further says, "Any person who continues to run a school after the recognition is withdrawn shall be liable to a fine, which may extend to Rs 1 lakh and, in case of continuing contraventions, to a fine of Rs 10,000 for each day during which such contravention continues." Are government schools exempt from these provisions?



Further, it has been shockingly reported in newspapers by the Karnataka State Primary School Teachers' Association (KSPSTA) that the government has not been providing adequate maintenance funds to schools for paying electricity and water bills for four to five years. Hence, schools are facing disconnection from BWSSB, and teachers have to pay electricity bills from their pockets! Only Rs 2,500 to Rs 3,000 are being provided in place of eligible amounts of Rs 10,000 to Rs 1 lakh, depending upon the number of students. With this meagre amount, they are only able to provide for drinking water and the cleaning of toilets. The KPSTA's plea to the government is to provide free water and electricity to government schools.

Pressed to announce a timeframe within which the infrastructure norms will be met and to allocate the budget required for the same in the above-mentioned PIL, the Director of Public Instruction has stated in his report of March 13, 2023, to the Amicus Curiae that "basic amenities in government schools as per the RTE norms... will be provided step by step as per the availability of grants". It has been reiterated in the government's Compliance Affidavit of June 17 that RTE norms will be fulfilled "based on the funds available in the next five years". So, are government schoolchildren to wait for another five years for basic norms to be fulfilled?

One can see the reason for the above statements by the Director. According to the analysis of Karnataka's latest budget of 2023–24 by PRS Legislative Research, Karnataka has allocated 11% of its expenditure on education, which is lower than the average allocation of 14.8% for education by states in 2022–23. It is also a reduction of 12.4% expenditure made in Karnataka's budget for 2022–23.

This has to be viewed again in the context of two further occurrences last year. A circular was issued by the Education Department in October 2022 asking school development and monitoring committees (SDMCs) to collect Rs 100 donations from parents every month, albeit 'voluntarily', towards "developmental activities' such as minor repairs, drinking water facilities, cleaning of toilets, etc.", when the RTE Act makes"free education" a Fundamental Right. The circular had to be withdrawn overnight due to a severe backlash. In another circular issued in December 2022, the department asked all head teachers of government schools to take children on a mandatory annual trip before the year end. However, strictly no money would be given by the department for this, and head teachers had to raise the resources themselves!

Considering the department's report in the PIL, the HC has directed the State Government to conduct a fresh survey of the schools within three months, with the Secretary of the Taluk Legal Services Authority as a necessary party, and submit the report to the court. The court has further directed that wherever no drinking water or water for cleaning purposes is available, the state government shall provide these within two weeks from the date of its order. If certain other shortcomings are revealed during the survey, it has asked the state government to take corrective steps to rectify them immediately.

Will the new government, which has promised so many guarantees, guarantee its commitment to provide basic facilities for enabling equitable quality education to the mostly poor children attending the government schools?

(The writer is the executive trustee of CIVIC-Bangalore) SH/51/6 **IN PERSPECTIVE**

Schools must spot and stop bullying

Bullies who go unpunished in school might indulge in ragging in higher classes

MATHEW C NINAN

There is a tendency to ignore bullying as a childish act or a mischief that young children indulge in for fun. This is not a sensible approach if one considers the consequences of bullying and the long-term trauma that the victims face.

Bullying happens often in schools. It can happen inside the classrooms, on the school ground, inside the school buses or in the dining hall or washroom areas.

Some get reported while many go unreported or unnoticed. What we need to understand is that it is bullying that transforms into ragging in colleges. In other words, when those who bully go unpunished in school, they will resort to ragging as they go to higher classes.

higher classes. Bullying is an unwanted, aggressive behaviour often indulged in by those with superior physical strength on others who are weaker. There is a power imbalance and it is taken advantage of by the ones with more power.

There are different types of bullying. It can be verbal bullying in the form of teasing, calling names, body-shaming, etc. It can also be intimidating the weaker ones by spreading rumours.

by spreading rumours, shouting down or ordering them around.

There can be social bullying which involves isolating someone, embarrassing others not to be friends with someone and the like.

Physical bullying also happens in schools. This includes physical violence like hitting, punching, kicking, pinching, etc, very often, unprovoked.

physical violence memitting, punching, kicking, pinching, etc, very often, unprovoked. Cyber-bullying also has started in recent times. Some students use this method to browbeat their juniors or the ones they want to target. They use cell phones and computers to send offensive texts or hateful messages to defame or hurt their targets.

We need to nip this in the bud while they are children. Sometimes they do it for fun, without realising its dire consequences. They should know that those who are at the receiving end endure a lot of pain and suffering. Some of them experience extreme fear, anxiety and even depression which can do serious damage to their self-esteem and confidence levels.

Families, too, have a responsibility in this regard. It is noticed that children who bully come from families where there is bullying, aggression and violence among siblings and neighbours, and the same behaviour spills on to the school. Parents must

ensure that such behaviour is curbed so that children do not make it their second nature and carry such tendencies to school.

Violence breeds violence. Parents shall not resort to physical violence. They have to teach their children good behaviour without resorting to strong-arm methods. Confident parents do not need a stick to discipline their children. Modelling good behaviour is the best form of parenting. Parents, teachers and

Parents, teachers and school counsellors must jointly address this issue. If left unattended, bullying can grow into ragging and even criminal violence in their later life, and the consequences can be disastrous. The sad part is that it is not only the bully who will suffer, but also the innocent victims of the bully.

Three-pronged strategy A three-pronged strategy is necessary to handle this issue. The first one is that every school must adopt must be a mechanism for the students who are bullied to report to their teachers instantly. Affected children must be reassured that they will be protected and no harm will come to them. This is very important because every bully will leave a warning that the incident should not be reported.

An effective redressal mechanism must be put in place and this must be constantly monitored by a team of senior teachers, who are accessible and sensitive to students' needs.

The second step is to counsel the children, not only the ones who bully, but also the ones who are bullied. Pastoral care is needed to encourage good behaviour in students and create a healthy climate at school. The parents concerned should also be taken into confidence.

Thirdly, in spite of all these steps, if a student persists with bullying, stringent punishments should follow. Punishments must be a deterrent to the ones who derive sadistic pleasure from harming others. If not checked, they are likely to become a societal risk, and so they have to be reformed.

Schools have to be extremely vigilant. They have a responsibility to protect children who are innocent and defenceless. We need to lend them voice, and empower them. There should notbe a situation where innocent children cower in fear and suffer mental agony and humiliation in the hands of bullies.

Every responsible school should declare zero tolerance to bullying and put in place swift and decisive action in case it happens. If schools take care of bullying, ragging in colleges will come to an end, in all probability.

(The writer is director, Little Rock Group of Institutions, Udupi)

MANJIMA MISRA

s the adverse effects of the climate crisis become increasingly imminent, the call for equity in all spheres of life needs to be equated with the call for climate change education (CCE). It is imperative for the educational curriculum to incorporate climate education as an integral element of every discipline, from STEM courses to literature and the arts. The significance of a curriculum inclusive of climate education lies in its interdisciplinary potential to build students who can initiate cross-sectoral climate action. However, school curricula in India currently lack this focus on interdisciplinary climate studies

The One UN Climate Change Learning Partnership Resource Guide mentions that "the complexities of climate change re quire it to be addressed using a holistic approach that draws upon a range of disciplines and areas of expertise, including climate science, policy, law, ethics, sociology, economics, and culture, with the aim of an effective and inclusive knowledge sharing approach." Furthermore, it specifies that "CCE promotes learning about the causes and effects of climate change as well as possible responses, providing a cross-curricular and multidisciplinary perspective.

The integration of various disciplines with climate studies is of fundamental importance as it reshapes socio-economic structures to be more equitable. Students equipped with climate education can grow to be innovators and policymakers who drive change for educational and eco nomic equity through climate action. The multidisciplinary nature of environmental studies inevitably signifies that climate education can be achieved at the school level, as climate studies can be included in the curricu lum of sciences, social science, literature, and the arts.

To provide examples of the integration of CCE with other disciplines such as Economics and literature, it is essential to understand the contribution of CCE towards humanising these fields. For instance, economic growth has often been posited as a force that runs contrary to climate activism. However, an education in Economics that integrates CCE will demonstrate that climate action is essential for economic prosperity.

A 2015 study by Marshall Burke, Solomon Hsiang, and Edward Miguel states that "unmitigated warming is expected to reshape the global economy by reducing average global incomes by roughly 23% by 2100 and widening global income inequality, relative to scenarios without climate change." Further, a study by Katherine Ricke et al. (2018) indicated that India alone would bear almost a quarter of the economic costs inflicted globally by climate change.

Economic growth and climate action can be in harmony, as Naomi Klein, Professor of Climate Justice at the University of British Columbia, points out: "If industrial policy were brought in line with climate science, the supply of energy through wind, solar, and other forms of renewable energy would generate a huge number of jobs in every country—in manufacturing, construction, installation, maintenance, and operation".

Similarly, including stories and creative arts in school curricula that express the narratives around climate change and clidren's ability to conceptualise literature and films on climate change. Children can grow up to be imaginative story tellers, filmmakers, and artists who can capture the essence, nuances, and complexities of the entire discourse on climate change.

Amitav Ghosh points out the lack of representation of climate change in contemporary literary fiction and that "the climate crisis is also a crisis of culture, and thus of the imagination." To bridge this gap in imagination, it is crucial that the literature and arts curriculum at the schoollevel integrate the creative and cultural expression of the climate crisis and climate action in the prescribed stories and poems.

Educational equity is best supported by climate equity, as the detrimental consequences of climate change on vulnerable children and adolescents are multipronged. Various studies show that hotter climates lead to an unfavourable learning atmosphere and reduced performance in exams. As per a 2019 UNICEF report, case studies on the countries of the East Asia-Pacific region demonstrate that climate disasters such as floods, droughts, heatwaves, and air pollution lead to absenteeism and lower enrolment rates through their negative impact on health and livelihoods.

Aninterdisciplinary approach to climate education provides scope for cross-sectoral collaboration amongst stakeholders to create and implement a climate action plan that mitigates its multidimensional impact on health, livelihoods, education, and other domains of human life.

(The writer is a Delhi-based author) SHJ3V7 DAINIK JAGRAN (P -6), 31 JULY 2023

शिक्षा वही, जो संस्कारवान बनाए

गई है। पुरातन को अधुनातन बनाना होगा।

अनुपयोगी कालबाह्य छोडकर उपयोगी

आधनिकता गढना शिक्षा का उद्देश्य होना

चाहिए, लेकिन विदेशी सत्ता के दौरान

भारत के अतीत को अपमानित करने

और इतिहास परंपरा के विरूपण का काम

हआ। दर्शन विज्ञान आधारित हिंदु संस्कृति

को सांप्रदायिक कहा गया। शिक्षा प्रामाणिक

नागरिक नहीं बना पाई। ब्रिटिश राज में

प्रामाणिक मनुष्य की रचना का काम

बाधित हुआ। शिक्षा का उद्देश्य ब्रिटिश

सत्ता के आजाकारी अधिकारी-कर्मचारी

तैयार करना हो गया। स्वतंत्र भारत में भी अंग्रेजी राज वाली शिक्षा प्रणाली चलती

रही। ऐसी शिक्षा से राष्ट्र को खास लाभ

नहीं हुआ। इस शिक्षा ने समाज के प्रत्येक

शिक्षार्थी को प्रतिस्पर्धी बनाया। प्रतिस्पर्धी

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कुछ करने को तैयार रहते हैं। पढ़े-लिखे

यवा भी आतंकी संगठनों का कच्चा माल

बनते हैं। भ्रष्ट बनते हैं। अपराधी भी

बनते हैं। गांधीजी ऐसी शिक्षा से चिंतित

थे। गांधीजी ने इस संदर्भ में लिखा. 'अब



इदयनारायण दीक्षित

शिक्षा का मतलब कुछ परीक्षाएं पास कर लेना ही नहीं होता, बल्कि समी समस्याओं पर विचार करने के योग्य बनना होता है

• ष्टीय जांच एजेंसी यानी एनआइए ने हाल में पुणे के डा. अदनान अली को गिरफ्तार किया है। एमबोबीएस-एमडी अदनान 16 वर्षों से चिकित्सा क्षेत्र में सक्रिय था। उसे अंग्रेजी. हिंदी, मराठी और जर्मन भाषाओं का जान है। इतना उच्च शिक्षित होने के बावजूद वह आतंकी गतिविधियों में लिप्त था। वह खुंखार आतंकी संगठन इस्लामिक स्टेट में नौजवानों की भर्ती कराने की कोशिश कर रहा था। सामान्य धारणा यह है कि उच्च शिक्षित लोग संस्कारवान और अपराध से दूर रहते हैं। मानवता और राष्ट्र के प्रति संवेदनशील होते हैं, लेकिन वस्तुस्थिति इससे भिन्न है। ऐसे मामले दर्शाते हैं कि शिक्षित होना संस्कारवान होने की गारंटी नहीं। अलकायदा सरगना ओसामा बिन लादेन से लेकर अल जवाहिरी और जैश-ए-मोहम्मद से जुड़ा अफजल गुरु भी उच्च शिक्षा प्राप्त था। खालिस्तान के कुछ पक्षधर भी उच्च शिक्षा प्राप्त हैं। भारत की प्रशासनिक सेवाओं में कार्यरत अधिकारी

भी उच्च शिक्षित होते हैं, लेकिन कई लोक सेवक गंभीर भ्रष्टाचार में लिप्त पाए गए हैं। राष्ट्रजीवन के अन्य क्षेत्रों में भी उच्च शिक्षित लोगों की ऐसी स्थिति देखने को मिलती है।

आधुनिक शिक्षा प्रामाणिक मनुष्य नहीं तैयार करती। जबकि मनुष्य को संस्कृति, राष्ट्र और मनष्यता के प्रति निष्ठावान संस्कारों की आवश्यकता होती है। आदर्श नागरिक बनाने के लिए मनुष्य का प्रबोधन आवश्यक है। यह शिक्षा के माध्यम से होना चाहिए, किंतु स्थिति निराशाजनक है। वर्तमान शिक्षा आजीविका प्रबंधन और धन संपन्नता अर्जित करने का उपकरण मात्र बनी हुई है। प्रसिद्ध विचारक जे. कृष्णमूर्ति ने कहा है, 'शिक्षा का मतलब कुछ परीक्षाएं पास कर लेना ही नहीं होता, बल्कि सभी समस्याओं पर विचार करने के योग्य बनना होता है। शिक्षा का तात्पर्य यही है कि आप स्वतंत्रतापूर्वक बेरोकटोक विकसित हो सकें।' शिक्षा को संस्कृति के साथ जोडना जरूरी है। वस्तुतः, संस्कृति कछ और नहीं, बल्कि उच्चतर जीवन मुल्यों के संवर्धन का ही नाम है। भारत के संविधान में इसे मूल कर्तव्यों के अंतर्गत 'सामासिक संस्कृति' कहा गया है। सर्वोच्च न्यायालय ने 'सामासिक संस्कृति' के निर्वचन में कहा है, 'इस सामासिक संस्कृति का आधार संस्कृत भाषा और साहित्य है, जो इस महान देश के भिन्न-भिन्न जनों को एक रखने वाला सत्र है। इस देश के लोगों में अनेक भिन्नताएं हैं। वे गर्व करते हैं कि वे एक सामान्य विरासत के सहभागी हैं। वह विरासत संस्कृत की विरासत है।'

समकालीन शिक्षा में सांस्कृतिक प्रवाह नहीं है। नई शिक्षा नीति में यह कोशिश की



अवघेरा राजपूत

ऊंची शिक्षा को लें। मैंने भूगोल सीखा। खगोल सीखा। बीजगणित-रेखागणित का ज्ञान भी हासिल किया, भूगभं-विद्या को भी पा गया, लेकिन उससे मैंने अपने आसपास के लोगों का क्या भला किया? अगर यही सच्ची शिक्षा हो तो मैं कसम खाकर कहूंगा कि जो शास्त्र मैंने गिनाए हैं, उनका उपयोग मुझे नहीं करना पड़ा। ऐसी शिक्षा से हम मनुष्य नहीं बनते। उससे हम अपना कर्तव्य नहीं जान सकते।

भारत में प्राचीनकाल से ही शिक्षा का उद्देश्य मुक्त चिंतन आधारित संस्कार देना एवं लोकमंगल की भावना विकसित करना था और प्रामाणिक मनुष्य बनाना भी। विषयों का ज्ञान व्यक्ति के चित्त का रूपांतरण नहीं करता। छांदोग्य उपनिषद के अनुसार ऋषि नारद उस समय के प्रतिष्ठित विद्वान सनत कुमार के पास पहुंचे और कहा कि, 'मैं बहुत अशांत और उद्विग्न हूं। हमारा मार्गदर्शन करें।' सनत कुमार ने पूछा, 'तुमने क्या-क्या पढ़ा है?' नारद ने कहा, 'मैंने वेद पढ़े हैं, व्याकरण पढा है, इतिहास पढा है, निरुक्त

पढ़ा है, भूगर्भ विद्या, खगोल विद्या भो पढ़ी है। विज्ञान पढ़ा है। समाज विज्ञान पढ़ा है।' ऐसी तमाम विद्याओं को पढ़कर भी नारद अशांत थे। सनत कुमार ने कहा, 'ये सारी विद्याएं नाम और संज्ञा हैं। वाणी इनसे बड़ी है। वाणी से बल वड़ा है। आशा उससे बड़ी है, लेकिन ये सब अल्प और अपूर्ण हैं। सांस्कृतिक संपूर्णता के ज्ञान से सख मिलता है।'

शिक्षित व्यक्ति को सजनशील होना चाहिए और संवेदनशील भी, मगर आज की शिक्षा व्यक्ति को संवेदनशील और रचनात्मक नहीं बनाती। अस्तित्व के प्रति आस्तिक भी नहीं बनाती। भविष्य के प्रति आशा भी नहीं जगाती। आशा असल में अस्तित्व और भविष्य पर सकारात्मक विश्वास का नाम है। आशा रहित लोग अनचित साधन से शीघ्र परिणाम चाहते हैं। उनका अंतःकरण गलत काम रोकने के निर्देश नहीं देता। शिक्षित अपराधियों को सफलता गलत काम को प्रेरणा देती है। भारतीय ज्ञान परंपरा में गलत कार्य को पाप और लोकमंगलकारी कार्यों को पुण्य कहते हैं। यहां पुण्य कमं शुभ फल दाता हैं और पाप कमें दंडनीय। अच्छी बात है कि आजादी के 75 वर्ष बाद केंद्र सरकार ने भारतीय ज्ञान परंपरा को महत्व दिया है। शिक्षकों से अपेक्षा की गई है कि वे अध्यापन में भारतीय ज्ञान से संबंधित उदाहरण दें। उच्च शिक्षा प्राप्त लोगों का आतंक जैसे जघन्य अपराधों से जडना गंभीर चिंता का विषय है। अटनान सहित तमाम उच्च शिक्षा प्राप्त लोगों का आतंक में लिप्त होना विश्व चिंता का विषय है।

(लेखक उत्तर प्रदेश विधानसभा के पूर्व अध्यक्ष है) state (34) response@jagran.com