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FELA

FEDERATION OF EDUCATION LEADERS & ADMINISTRATORS

Overcoming the barriers in higher education

THE NATIONAL EDUCATION POLICY 2020

An Interplay of Technology & Education

EXCLUSIVE ARTICLES

By education leaders from all over India

FELA
FEDERATION OF EDUCATION LEADERS & ADMINISTRATORS

Merry Christmas

&

HAPPY

NewYear

2022

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FELA

FEDERATION OF EDUCATION LEADERS & ADMINISTRATORS

Overcoming the barriers in Higher Education

OVERCOMING THE BARRIERS IN HIGHER EDUCATION

ABOUT US

THE FEDERATION OF EDUCATION LEADERS AND ADMINISTRATORS

The Federation for Education Leaders and Administrators Foundation (FELA) is a section 8 company and an organization that aims to bring together education leaders from all over the world. This initiative seeks to use these great minds' intellectual capacity to overcome the challenges in the vast Indian academia.

Vision:

Our vision at FELA is to improve academia by offering intellectual guidance and advice to create an inclusive educational environment by embracing new technology, training, , upgrading infrastructure, and enriched educational policies.

THE FOUNDATION OF EVERY STATE IS THE EDUCATION OF ITS YOUTH.

-DIOGENES

About us

India is a vast country not only in terms of population but also workforce and resources. And it can grow its financial stability and strength if it regards education as the main focus point. The educational sector is one of the significant aspects that could help India become an economic superpower and build off the necessary general welfare projects. We are all aware that India's top challenges consist of poverty, enabling wealthier sections to oppress those in the minor. This difference could only be overthrown by gaining knowledge and empowerment through education.

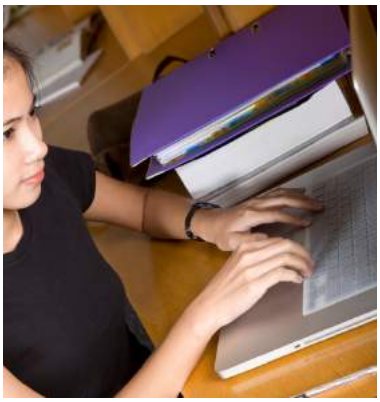
An individual with access to proper education would build the necessary skills and capabilities to grow in the future. This right to education would allow them to survive the hardships in life and gain employment opportunities to boost their financial and social status. Hence, it is necessary to overcome the obstacles in higher education to make this country better in society, economy, technology and every sector that matters. FELA considers overcoming educational barriers its basic underlying principle and hopes to change the education sector positively

PROGRAMS OFFERED

FACULTY DEVELOPMENT PROGRAM BY FELA

Faculty members need to be prepared by some faculty development programs (FDP) to deal with the rapid changes and shifting standards; without such training, teaching is often reduced to instructors presenting their understanding of the subject by one-way lecturing. Faculty Development Programs are necessary to, Improve faculty skills involving education technology, Professional development, Organizational development, Career development and Personal development, stressing the life planning, interpersonal and communication skills of faculty members.

Considering all these factors, FELA believes the faculties are the lifeblood of any educational institution, and by investing in faculties, an institution can significantly improve its success and efficiency. To empower faculties, we need to provide the best education for students, and we need to invest in the best training for them. Keeping this in mind, FELA offers efficient and powerful Faculty Development Programs conducted and presented by the senior-most education leaders and experts



MANAGEMENT DEVELOPMENT PROGRAM BY FELA

Management development is an organized process of training and development meant to produce behavioural differences among the management executives and management students.

FELA's Management Development programs are designed to make present, and future managers improve productivity and increase their capability and efficiency for future work. Self-development is an essential concept in the whole programme. Managers of different levels discover and strengthen their knowledge, potential, experience, and abilities to improve their performance and achieve organizational goals. The efficiency of managers at business adds a lot to the prosperity of each organization.

To develop employees and managers skills is deemed an investment and not a cost. The participants are allowed to improve their present jobs and adapt them for further assignments. Our Management Development Programme includes short courses, leadership courses, management education and training programmes, coaching, guiding, and mentoring. These programs are made with at most care and designed and organized by industry leaders, education specialists and field experts with 30-40 years of experience.

Student Development Program

Our Student Development Program emphasizes continual development and empowerment of students through training and other activities to make them Industry-ready. Our training inputs assist them in learning and acquiring new skills and competencies through various ventures such as group discussions, seminars, webinars, expert lectures etc.

All institutions strive for the best placement of their students through their continuous effort in developing students for facing challenges in the corporate world. Headed by an eminent and efficient person with decades of experience in the corporate and academic world, FELA conducts its Student Development Programs designed by Industry and Education leaders with 30+ years of experience.

OUR PROGRAM STRIVES TO IMPROVE AND DEVELOP STUDENTS PROFESSIONAL SKILLS BY ORGANIZING TRAINING SESSIONS AND GUEST LECTURES BY MOST SENIOR AND EXPERIENCED PROFESSIONALS OF THE CORPORATE WORLD AND THE EDUCATION SECTOR FOR A HOLISTIC EMPOWERMENT PROGRAM.

FELA WELCOMES ITS NEWEST MEMBERS

Leadership and management are two essential duties of our directors. We have incredible leaders with visionary qualities who give scope to the organization's problems and planning. They are charismatic communicators who rev up their troops in anticipation of achieving big dreams for the organization. They manage people, property, and assets to fulfil the administration and the board of directors' goals before them. They are the busy bees who organize, control and monitor the day-to-day activities of our operations at FELA.

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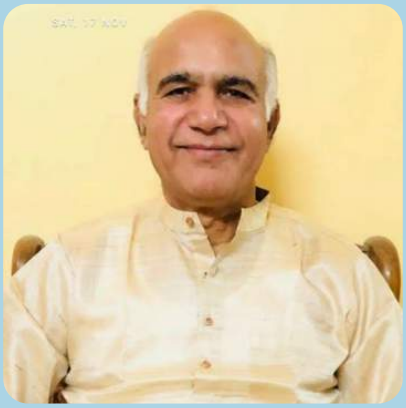

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EDITORIAL

NEP 2020: AN INTERPLAY OF EDUCATION AND TECHNOLOGY

BY
RAISY NEWBIGA.N, PROJECT MANAGER AND CONTENT WRITER AT FELA

The Indian government authorized the New Education Policy (NEP) in July 2020. Its primary aim is to globalize and revolutionize the Indian education system from the pre-school to PhD levels, ramping up its outdated style. The NEP-2020 is replacing the previously existing National Policy of Education-1986, and it is a cumulative framework focusing on every step of the education sector.

There is no denying that the National Education Policy, 2020, is groundbreaking in every way. The proposal covers various topics, starting from early childhood care, holistic education, and various reforms. The synergy of education and technology is a theme that unites the whole document in a way. India has evolved into an “information-intensive society” over the last decade, and there is an increasing need to adopt technology into the education system. One of the central ideas, as per the policy, is including the use of technology in both teaching and learning extensively while retracting the existing linguistic barriers, increasing access to technology, and optimal education planning, management and administration.

In recent times in the post COVID society, the parents, teachers, administrators and students are required to re-imagine conventional education and instruction methods under the current "pandemic situations," with interactive education substituting in-person knowledge sharing practices. At this crucial crossroads, the policy's elements are necessary because it presents the concept of education for forthcoming generations and will be a fundamental tool in creating a "self-reliant" community of educated professionals.

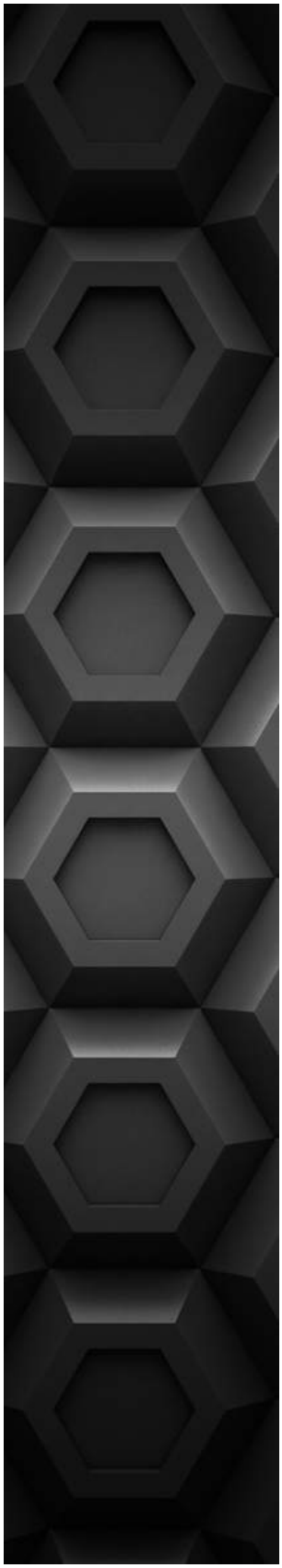
The magnitude of applied learning, recurring learning pathways, and resource sharing is highlighted in NEP 2020. There's also the focus on technology-enabled education starting in grade 6 and varied subject combinations. It also portrays a self-sufficient perception of learning built on a solid basis of 5 years of activity-based learning and another three years of training.

We've discussed some of the significant features of the technology policy as follows:

India-gone digital – Investment in digital infrastructure, development of online education platforms and devices, creation of virtual labs and digital depositories, training teachers to become high-quality online content creators, developing and implementing online tests, and defining content, technology, and pedagogy standards for online teaching-learning are all part of the strategy.

The policy calls for establishing a dedicated unit to plan the growth of digital technology, digital content, and capacity building for both school and higher education's e-education needs.

Education at the primary level – The policy recognizes the value of technology in assisting teachers, bridging the language gap between teachers and students, building digital libraries, popularising language learning, and ensuring greater educational access (specifically for differently-abled children). It is also suggested that coding be included in school curriculums as a necessary skill for students to learn. The policy also recognizes that technology can be a valuable tool in promoting teacher education and promoting online teacher-training platforms.



Education administration – The policy also includes establishing an Academic Bank of Credit to digitally store academic credits earned from various HEIs to promote the award of degrees based on credits earned over time. Thea policy's focus on using technology to ensure the quality and accountability of regulatory bodies, including the State School Standards Authority and the Higher Education Commission of India, as well as its four verticals – the National Higher Education Regulatory Council, National Accreditation Council, Higher Education Grants Council, and the General Education Council – is an intriguing aspect.

Higher and professional education – The importance of embracing technology in professional education (legal/health) and incorporating technology to accelerate achieving 100 per cent literacy (by offering high-quality technology-based adult learning options) has also been raised.Getting used to AI – The policy acknowledges the problems that have arisen due to the widespread use of artificial intelligence and emphasize the need to adapt to the changes due to the increased use of AI across sectors. It has charged the NETF with defining and categorizing emergent technologies based on their "potential" and "estimated timeline for disruption" and presenting a systematic

analysis to the MHRD, formally classifying those technologies requiring appropriate responses from the educational system.

Although the policy is a novel and forward-thinking document that recognizes the critical role of technology in promoting learning and teaching, it is essential to establish a cohesive plan of action for fostering technical proficiency to aid successful engagement with technology (and its potential advancements) while ensuring adequate data security and privacy protections. The policy recognizes that in the future, information will be more dematerialized and digitized in education. This mindfulness is a tremendous achievement for India's traditionally conservative educational system.

-Raisy Newbiga N

Content writer and Project Manager at FELA

DIGITAL INDIA AND NATIONAL EDUCATION POLICY-2020

BY PROF. DR. PARVINDER SINGH

VICE CHANCELLOR AT RAYAT BHARA UNIVERSITY, PUNJAB.

The COVID-19 pandemic has created unforeseen challenges in India's educational landscape. Schools and colleges have switched to remote learning and started online classes and exams. The pattern of education has changed overnight, and digital learning has emerged as the primary alternative. This sudden switch and overdependence on technology have come with its fair share of constraints. Amidst this transition, for the first time in 34 years, the erstwhile Ministry of Human Resources and Development, now known as the Ministry of Education, launched the New Education Policy on 29th July 2020. Expectedly, the policy proposes several measures for promoting digital learning and enhancing infrastructure requirements. However, given India's socio-economic and regional diversity, there are multiple roadblocks to accessibility and the ability to widespread adoption of online teaching and learning, some of which are discussed in this commentary.

DIGITAL DIVIDE

Digital deprivation has been an ongoing issue in India even before the challenges brought on by the COVID-19 pandemic. The critical problem surrounding remote learning and online classes in the country is the issue of equitable access.

Along with adequate penetration of internet and technology services, accessibility in this context also includes access to electronic devices such as computers and smartphones.

According to NSSO data, only 4.4% of rural households and 23.4% of urban households own computers. Moreover, while 42% of urban households have a computer with an internet connection, the same is available to only 14.9% of rural households. A report by Nielson in 2019 concluded that 70% of the rural population does not have an active internet facility, with states like West Bengal, Bihar, Jharkhand and Odisha having the lowest internet penetration. Especially in the northeastern states, the report's findings indicate that users are less affluent and predominantly male. Remote learning has also been a challenge for students in the union territory of Jammu and Kashmir. The ongoing ban on 4G internet has been particularly challenging for students and teachers in the state, with digital learning becoming the only option during the pandemic. It has been reported that the available 2G internet connectivity has led to unclear audio and frequent video call drops, among other problems.

The increasing affordability of smartphones, growth in several users in rural India, and several government initiatives have led to the expansion of India's smartphone user base in recent years. However, on the other side of this growth is that there are still around 800 million people who do not have access to smartphones. The audio-visual content in online learning, whether in video calls or downloadable/streamable videos, requires high-speed 4G internet. As per the ICEA report quoted above, in 2018, India had approximately 277 million VoLTE capable devices and more than 50% 4G device penetration across India.

However, the share of smartphone penetration was only around 25% in rural areas. Given that 99% of rural internet users access the internet on mobile phones, this effectively means that most students in rural areas do not have the tools required to access online classes. Some of the worst consequences of the lack of smartphone penetration and 4G internet have been incidences of student suicides, seemingly in response to the inability to afford intelligent devices and the mounting pressure to attend online classes to keep up with coursework.

E-learning will shape the way for advanced learning methods in ed-tech

With the internet penetration rate estimated to reach above 55 per cent by the end of 2025 in India, digitization of education remains one of the topmost priorities of our government. Taking the cue, many e-learning portals have appeared and are performing well as an increasing number of learners enrol themselves for online courses — the new regular post the pandemic.

Starting 2020, Indian universities and colleges, which were earlier not permitted to offer more than 20 per cent of a degree online, are now lifting the restrictions on online learning to widen access to higher education and raise the profile of Indian institutions globally. Many ed-tech companies have also surfaced and offer learning management resources, including blended learning, 3D and DIY kits and AI-based experiential and interactive learning, to provide an unrivalled experience.

Emphasis on digitization

Realizing that rapid development depends on widespread education, the government rolled out a new National Education Policy (NEP) that emphasizes digitization besides the use of technology in education. It also focuses on ed-tech for furthering education, particularly in rural areas

. It was mainly done to take quality education to all parts of the country, especially the Tier-2 and three cities and villages. The government learnt that technology could reach small towns and villages and provide access to quality teachers. This was a distant dream, but massive tech disruptions across the country have successfully executed the mammoth task that was earlier unimaginable.

Budget 2021-22 allocated ₹93,224.31 crores to the Ministry of Education. It increased over ₹8,100 crores from the revised estimates for the current fiscal, and the Department of Higher Education was allocated ₹38,350.65 crores.

Bridging the digital divide

The shift to online education also brings forward the conversations around the digital divide and the digital readiness of every stakeholder and institution. Emphasis on digitization

Realizing that rapid development depends on widespread education, the government rolled out a new National Education Policy (NEP) that emphasizes digitization besides the use of technology in education. It also focuses on ed-tech for furthering education, particularly in rural areas

The digital divide in schools is significantly higher than in higher education institutions. The Budget talks about bridging the digital divide in government and private schools, which is another area that needs improvement. Work is required in order to make education accessible through digital means for all school students, irrespective of their location, financial background, and internet and bandwidth connectivity. Creating the proper infrastructure, hiring good teachers and building a suitable curriculum for every school is the way forward. We also need to measure school students' readiness for adoption of online examination processes by way of mock test sessions and their analytics.

Industry-ready students

The key priorities for higher educational institutions are to make the students industry-ready by assessing their competencies and aligning them to what is needed by the industry. This can be achieved by bringing research and innovation into the core of education and making it affordable for everyone across the nation. It is, therefore, time to bid adieu to the traditional and monotonous rote-learning methods, which stress memorization rather than a proper understanding of the subject.

With these initiatives, education is likely to witness a sea change in the forthcoming years as the Indian government is leaving no stone unturned to rapidly evolve with the most sophisticated educational technologies and raring to transform the nation's digital landscape. And with social distancing still in place amidst the pandemic, an increasing number of educational institutions continue to move entirely online to facilitate students. This indicates that e-learning is the future and will shape the way for advanced learning methods in ed-tech.

Latest tools, methodologies

Bidding adieu to the traditional teaching methods and issues such as shortage of teachers, inadequate student-teacher ratio, and insufficient teaching resources, digitization in education have made way for the latest teaching tools and methodologies that are now reaching students in the remotest corners of the country. And with inclusive education being one of the goals of the government, the hidden teaching model is likely to serve well.

The technology is also helping teachers connect with several students spread across several locations simultaneously. Interactive digital media also is an excellent solution to the shortage of teachers in the country. To facilitate the same, it plans to use technology to upgrade the skills of teachers through the online portal DIKSHA.

It is a digital platform for teachers across the nation that allows them to stay equipped with advanced digital technology while giving their lifestyle a digital twist.

Online exams too

In line with the education trends, examinations to are being conducted online. Digital platforms support assessments, online proctoring and certification, and secure, scalable, and credible remote exams. These web-based computerized exams have many benefits as they reduce costs, are time-saving, have a wider reach and are highly secure. This is because the process minimizes human, operational, infrastructure and logistical costs apart from saving the time consumed in planning, coordination and result generation. The platform can support a much larger candidate pool with no geographical constraint while ensuring auto invigilation of each candidate through strict prevention of content leaks and impersonation. The platform can support a much larger candidate pool with no geographical constraint while ensuring auto invigilation of each candidate through strict prevention of content leaks and impersonation.

In the days to come, digital education will further witness significant changes in the way universities and colleges provide education. This accelerated shift towards digital means in access to teaching and assessment isn't a temporary trend. Still, it will have long-term consequences that will shape the new normal future.

Ability	Rural		Urban	
	Male	Female	Male	Female
Able to operate a computer	12.6%	7%	37.5%	26.9%
Able to use internet	17.1%	8.5%	43.5%	30.1%

Table 1: Share of persons able to operate a computer and use the internet in India

Source: Ministry of Statistics and Programme Implementation 2019

LITERACY GAP

Along with a prevalent urban-rural divide, there also exists a deepening male-female digital literacy gap in India. Data from NSSO's 75th round national survey (2017-2018) shows a significant gap between the male and female population in rural and urban areas about operating a computer and using the internet. As shown in Table 1, only 8.5% of women in rural India can use the internet compared to their male counterparts (17.1%). For urban areas, the percentage of users is significantly higher, but the gender gap remains.

Other micro-level studies also show similar findings. In a study in the urban slums of Delhi, Aggarwal found that 90% of men had mobile phones, out of which 59% had a smartphone, and 58% had internet connection on their phones.

On the other hand, 58% of women had a phone, 22% had a smartphone, and 18% had internet connectivity [9]. Another study in Aligarh found that 52.25% of male and 14.28% of female respondents owned smartphones. Moreover, none of the female respondents could download applications or know about Google Play Store/any other app store.

This digital literacy divide among males and females is a critical structural constraint in the proliferation of digital learning methods that carries multiple negative impacts on women's educational attainment, skill development and workforce participation.

This digital literacy divide among males and females is a critical structural constraint in the proliferation of digital learning methods that carries multiple negative impacts on women's educational attainment, skill development and workforce participation.

IMPACT OF REMOTE LEARNING ON PUPILS AND TEACHERS

According to UNICEF, the closure of schools in 2020 has affected more than 1.5 billion children and young people worldwide, leading to a wide range of psychological and behavioural challenges. The increase in screen time impacts children physically and can also lead to a heightened risk of online exploitation. The rise in virtual platforms may expose young children to harmful virtual content, which may also contribute to cyberbullying.

An online survey conducted among 155 students across 13 states in India showed that students often complained about frequent headaches and neck/back pains due to long online classes. The survey indicates that students are subjected to 5-10 hours of screen time in a day, including school lessons and private coaching classes. Also, since 45% of students use headphones while attending lectures, there is an increased risk of developing hearing issues and eye problems and musculoskeletal pains. Lockdown teaching has also restricted students to the sit-down method of learning and reduced their extracurricular and physical activities opportunities.

Online learning has further proven to be a considerable challenge for students with disabilities.

As per a phone-based survey of 387 students with disabilities conducted by the NGO Swabhiman in May 2020, 56.8% were found to be continuing their studies, with the rest opting to drop out. Additionally, only 56.4% of those interviewed had access to personal or collectively used smartphones. The survey also found that deaf students were struggling during webinars with multiple speakers and generally found it difficult to lip-read on screens.

Notably, teachers are also at a high risk of being impacted both physically and mentally because of increased online learning. Media reports indicate that virtual classrooms have made significant adverse impacts, particularly on female teachers. Remote understanding has led to the rise in bullying of female teachers by older students and has thrown up numerous incidents of violation of teachers' privacy.

CONCLUDING REMARKS: NEP 2020 AND BEYOND

The NEP 2020, taking cognizance of the present education scenario in India, seeks to encourage "carefully designed and appropriately scaled pilot studies to determine how the benefits of online/digital education can be reaped while addressing or mitigating the downsides".

As part of its recommendations for leveraging digital technology for learning, the NEP aims to build a new autonomous body – the National Educational Technology Forum (NETF) – that will

standardize the content and pedagogy and promote the adoption of continuously evolving technologies for digital learning nationwide. Some of the more tangible initiatives recommended by the NEP are:

- Extension of existing e-learning platforms like DIKSHA and SWAYAM to provide teachers with user-friendly assistive tools like two-way audio and two-way video for monitoring pupils' progress.
- Development of a digital repository of coursework, simulations, game-based learning, augmented reality and virtual reality.
- Develop virtual labs using DIKSHA and SWAYAM to make such programs accessible to students and teachers belonging to socio-economically disadvantaged groups through preloaded tablets.
- Provision of a new National Assessment Centre to design and implement new assessment frameworks that incorporate 21st-century skills.

However, when it comes to addressing the digital divide, as discussed previously, the NEP recommends using television, radio and community radio for 24*7 broadcasts of educational programmes, including in regional languages. Whether such programmes can replace online classes and e-learning tools and provide the same quality y of education to students who do not have access to smartphones or the internet is up for debate. indeed, the NEP doesn't seem to offer any specific recommendations to bridge the gender gap in digital literacy, nor does it directly address online classes' physical and mental health consequences. It also doesn't seek to cover issues faced by students with disabilities while accessing online learning methods. indeed, the NEP doesn't seem to offer any specific recommendations to bridge the gender gap in digital literacy, nor does it directly address online classes' physical and mental health consequences. It also doesn't seek to cover issues faced by students with disabilities while accessing online learning methods.

It can be concluded that though the NEP offers some progressive initiatives for the development of e-learning tools and seeks to encourage equal access to technology, it misses the mark when it comes to addressing the grave structural challenges that characterize digital learning in India. In the future, it is imperative to bring about convergence between the goals of the NEP and flagship schemes like Digital India that seeks to expand access to communication infrastructure and internet connectivity across the country. Therein, a key focus has to be on bridging the gender gap in internet usage and access to smartphones and simultaneously making digital learning disability-friendly.

Prof. Dr. Gurdip Singh

Dr Gurdip Singh is a leading expert, educationist, technologist and leader in management science and practices with the rare distinction of having both corporate and academic leadership experience. He has been a career topper in academics and was the youngest manager in the Corporate Job. He has worked passionately for the enhancement of education with strong conviction, pedagogical models and the latest educational technologies.

ADAPTING TO ARTIFICIAL INTELLIGENCE UNDER THE NATIONAL EDUCATION POLICY

PROF (DR.) GURDIP SINGH

PROFESSOR - BUSINESS MANAGEMENT, IES UNIVERSITY, BHOPAL

The inherent thread that runs through The National Education policy is the interplay of education and technology. The approach recognizes challenges arising from the widespread use of artificial intelligence and highlights the need to adopt changes occurring because of the increased use of AI across sectors. It starts identifying and categorizing emergent technologies based on their 'potential' and 'estimated timeframe for disruption' and presents a systematic analysis to the MHRD, who shall then formally identify such technologies that require appropriate responses from the education system. In light of the emerging 'disruptive technologies, the policy is pioneering. It notes the need to generate awareness and research various aspects of the emerging disruptive technologies, including concerns about data handling and protection.

The New Education Policy (NEP) has acknowledged, in no uncertain terms, the importance of artificial intelligence and AI education in today's time. To align India's curriculum to the 21st century and prepare the students for the AI economy, the policy emphasizes the need to impart the necessary technical knowledge at all levels of education.

School children will be exposed to crucial skills such as digital literacy, coding and computational thinking from a young age through the teaching of contemporary subjects such as Artificial Intelligence and Design Thinking. In addition, colleges may also offer targeted training in low-expertise tasks for supporting the AI value chain, such as data annotation, image classification, and speech transcription.

"These are all part of developing 21st-century skills because education embeds these kinds of things to qualify the youngster concerning what is needed in the 21st century, which is communication, creativity, problem-solving and things of that type," says Dr Kasturirangan, Chairman of the NEP drafting committee. Further, to make India a leading knowledge hub of disruptive technologies, the National Research Foundation (NRF) will promote high-quality research in the realm of science and technology. Given the rising applicability and falling costs of AI-based predictions, particular focus has been on promoting research in this domain.

A three-pronged approach has been laid out to channel the research in AI, i.e.:

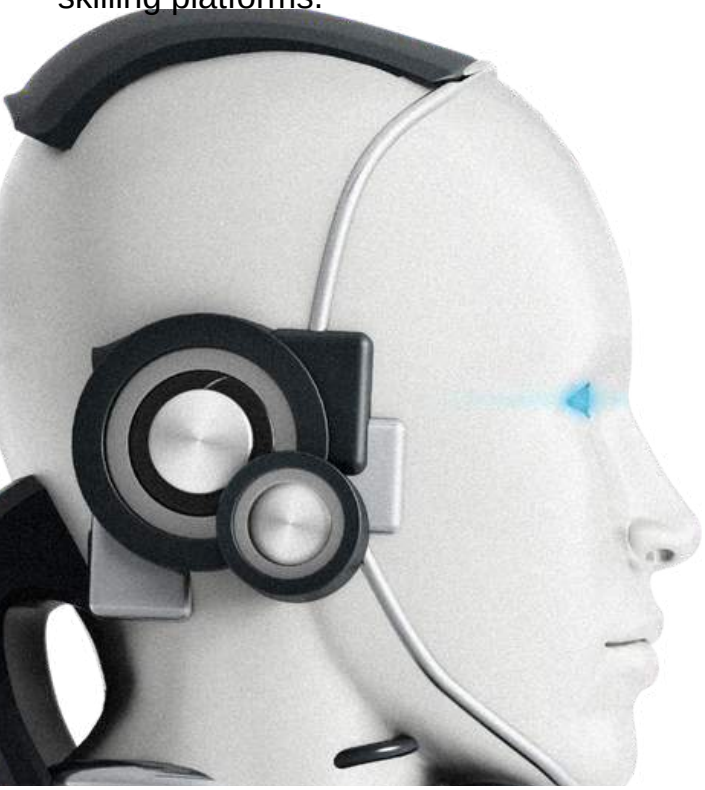
- We are advancing core AI research.
- We are developing and deploying application-based research.
- We are establishing international research efforts to address global healthcare, agriculture, and climate change challenges using AI.

The policy also envisions the use of AI-powered solutions to attain its goals of multilingual as well as holistic education. Promoting multilingualism among the school students will be interlocked with efforts to enhance Natural Language Processing capabilities for India's diverse languages. Additionally, AI will be used to track and record the life skills training of a child to prepare a holistic report card. So, the move from marks-focused reporting to skills-focused reporting is welcome. We should make innovative use of technologies such as AI in helping the stakeholders of the system by reducing their workload and making life easier by enabling them to focus on their core skills.

AI will play a critical role in education, and the sooner this is recognized and AI-based efforts are encouraged, the better for our country. Learning Matters uses explicitly AI to improve student learning outcomes and enhance teacher competency. There is going to be a boom in AI and IoT adoption globally, across industries and domains. We need a workforce that has been trained in AI and related technologies. So, training in AI and associated technologies must start early for students to become later the workforce that can create, invent, and improve successfully.

NEP 2020 Is Skill-based And Digital Savvy

The focus of the New Education Policy, 2020, is quite clearly on ensuring that students in India get a holistic education with an emphasis on skilling in disruptive technologies like AI. It also opens up massive possibilities for online skilling platforms.



Top Data Science & AI Trends to Watch Out For In 2021

The introduction of digital literacy, coding, and computational thinking from an early age, through contemporary subjects such as Artificial Intelligence, Big Data Analysis, and Machine Learning will set a strong foundation. This will also boost one's cognitive abilities required to excel in the age of the AI economy.

According to Pankaj Setia, Professor of Information System at IIM Ahmedabad, A thriving artificial intelligence industry requires the creation of a learned and advanced society, failing which the skill substitution through automation may threaten the growth of the economy and the nation. "The New Education Policy 2020 (NEP) has aptly recognized this dynamic. NEP offers a far-sighted vision and plans to transform the way Indians learn and acquire skills. NEP has very aptly focused on India's core strengths, such as multilingualism and multidisciplinary learning, to lay the foundations for an intelligent society and globally competitive workforce– two essential factors for the growth of responsible and prosperous AI industry," he added.

Summary

The Indian educational system increasingly realizes the importance of skill-based learning and the need to educate the future generations with new-age techs such as artificial intelligence, machine and analytics. Artificial Intelligence has already been applied to education primarily in tools that help develop skills and testing systems. Artificial Intelligence can drive efficiency, personalization and streamline administrative tasks to allow teachers the time and freedom to provide understanding and adaptability. By leveraging the best attributes of machines and teachers, the vision for Artificial Intelligence is one where they work together for the best outcome for students.

All AICTE approved institutions have been suggested to offer Artificial Intelligence as an elective in B.Tech. Courses and also start B.Tech course in Artificial Intelligence and Data Science to augment the human resource in Artificial Intelligence and Data Analytics. So far as the Indian Institutes of Technology (IITs) are concerned, their Acts and Statutes allow them to have their curriculum, academic & research collaboration with institutions and universities worldwide. Most of the IITs offer various Artificial Intelligence related courses such as Deep Learning Foundations & Applications, Foundation of Artificial Intelligence and Machine Learning, Reinforcement Learning, Probabilistic Reasoning in Artificial Intelligence, Predictive & Prescriptive Data Analytics, Deep Learning, System Identification, Cyber-Physical Security, Digital Image Processing, etc. Besides, IITs also organize short term programs, inter-alia, on Artificial Intelligence for the working professional and interested students.

Prof. Dr. Shrihari Prakash Honwad

Dr Shrihari is a Chemical Engineering graduate from BITS Pilani with a Postgraduate and Doctoral degree from the Indian Institute of Science, Bangalore. He is a senior academician with administrative and governance experience, the exposure, and contributions to, various functions – from teaching at one end of the spectrum to managing institutions – defining his career. Beginning as a teaching assistant with Industrial exposure, he has traversed a path where he became a researcher and eventually a teacher. His teaching career also saw responsibilities of Head of Department, Vice Principal, Principal of an Engineering College with 2000 students, (D J Sanghvi College of Engineering), Dean (engineering), Campus Director, ProVost and finally, Vice-Chancellor of three universities (UPES, Dehradun; G.D. Goenka University, Sohna), including currently at Sir Padampat Singhania University, Udaipur.

ADAPTING TO ARTIFICIAL INTELLIGENCE UNDER NATIONAL EDUCATION POLICY.

DR SHRIHARI PRAKASH HONWAD, PRESIDENT, SIR PADAMPAT SINGHANIA UNIVERSITY, UDAIPUR.

NEP envisages a Graduate Enrolment Ratio (GER) of 50% to be achieved, which is a very tall order by any standard. Considering the establishment of universities to accommodate so many new students would not only be big, but more importantly, the cost of this, when translated to be the cost to the student, is also going to be prohibitive. Simply put, the load on existing universities would increase, and necessarily workload on faculty would also be considerable. It is perhaps not a welcome development in an industry struggling for competent faculty unless there is a technological solution, and a straightforward answer is Artificial Intelligence. AI would play a significant role in many repetitive tasks for a teacher's judgment and remedial action.

Large Classrooms are a significant problem for teachers to relate to each student. They have a dynamic classroom strategy based on either visual, written, or verbal feedback, whether face to face or online concurrent mode. There is a more extraordinary dream than giving personalised instruction in a hybrid blended model would become a reality of fatigue, etc.

This would release the teacher's bandwidth and help him design better learning material.

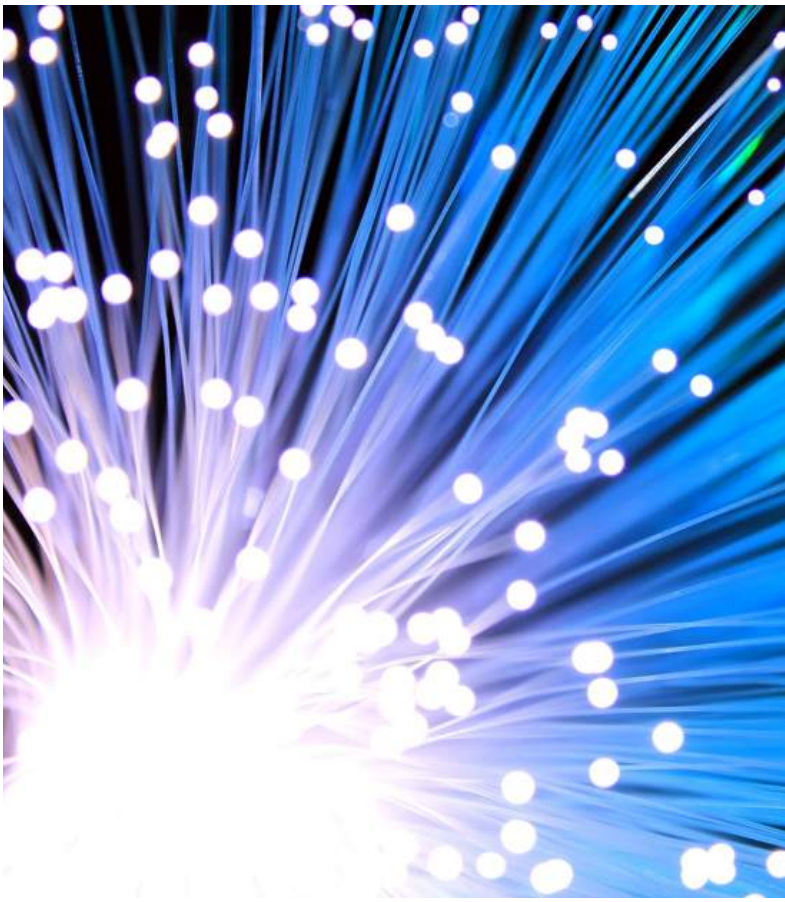
In preparation for learning material and updating also AI could be beneficial and keep track of newer information on the web. Similar assistance would also be available for learners with different learning styles. Based on the type of learner, either case studies or abstract ideas or numerical solutions can get supplied to the learner.

Entirely digitised lessons can have individualised and dynamically changing inputs being made available to individual learners. These are typically delivered in an asynchronous mode making the dream of learning at your own pace, time, and place. This could be one single technological impact on improving GER.

NEP envisages outcome-based learnings, and AI can be a handy tool to compare outcomes based on different tests. Other tests may be designed for different individuals with varying styles of education as well as various interests learning speeds using AI inputs. Demand examination is an easily achievable dream with AI assistance. Today AI-based other proctoring is already a game-changer in online examinations, and a day may soon come where our students may appear for JEE from the comforts of their bedroom. AI can be a boon to a learner because the learner's aptitude, attitude, and interests could be mapped to the ambitions in determining the best path one should follow in terms of skills and knowledge one needs to earn. AI can be a handy tool to modify attitudes and improve aptitudes as well. The NEP's interests are two things, first free migration across disciplines and second and more radical, academic banking of credits.

For the first, aptitude-attitude needs to be considered, but an optimal pathway to reach final credit requirements also needs to be determined. There would be a regulatory cobweb created for the migratory freedom to be implemented, and AI can come in handy for this. Further, learners can also determine what level they need to proceed (to take advantage of certificate/diploma/degree based on credits) to be employment worthy.

Academic banking of credits will be another nightmare for academics, institutions, and students alike with changing technologies and definitions. One can easily foresee some of the skill credits becoming irrelevant, and some knowledge credits becoming redundant. The best path at a given time can be forecast using AI for everyone's benefit.



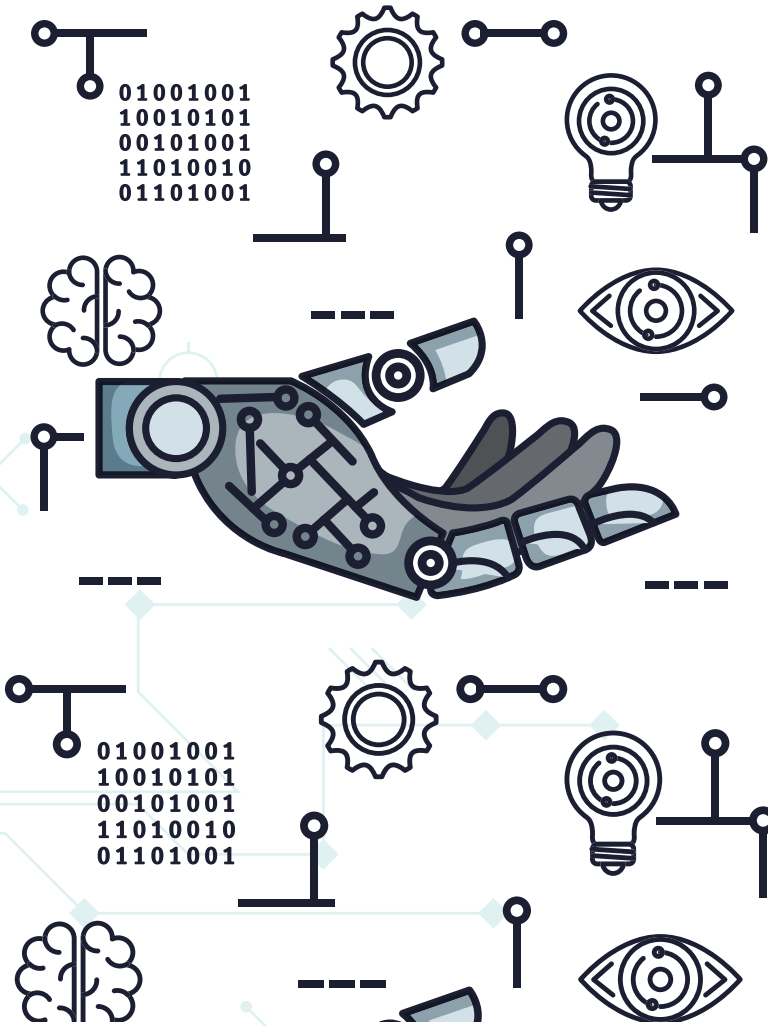
Employers also will want to use AI for candidate selection instead of depending on traditional tests and interviews. The job worthiness index could be something AI-generated (dynamically). With the Gig-projectized model, the Gig's worth can be determined, compared and used for final project allocations. Further, use by employers is perhaps outside the scope of this article, but one could use a case in the academic Industry to rope in AI application.

Universities would want to use the same AIAI-based stem to bring in faculty, adjunct faculty, industry experts, trainers, etc. Their performance also needs to be modelled, and economic returns and emoluments get connected through AI. AI can also help in Faculty development and futuristic forecasting. A robust system of meritocracy determining economic dividends needs to be established in academic plans, and AI can help build this performance-based progression system.

AI may be used in even student selection by universities and a competency mapping index, and a diversity index could bring together aid selections in ways almost unthinkable today. But let us hope the choice remains with students.

In a nutshell, AI could replace the entire rankings/accreditation process. Dynamic indexing (perhaps multiple indexing) umbrellas would assist all stakeholders, the regulators, policymakers, government, governing bodies, students, lifelong learners, faculty, industry-based stem and the larger society (perhaps entire humanity in case AI considered Sustainable Development Goals of the UN).

AI, which seems like a god sends a gift, can be a spoilsport and a disaster for some social interactions and may interfere with team building and leadership training. Access to some attitudinal issues may affect the dynamics of the teams and interpersonal relationships. AI may pre-empt responses and affect the natural process of learning. Ill designed AI may prove to be a disaster. However, AI is known to be a self-improving model if designed appropriately. AI would be an inadequate replacement for a teacher, and unplanned implementation could be a recipe for disaster.



Dr.Raj Kumar Mahajan

Dr. Raj Kumar Mahajan is presently the Registrar at GNA University, Phagwara. He has worked as a lecturer from 2.8.1988 till 15.07.2004 and has teaching experience of about 22 years and a Total Administrative Experience of about 17 years. He is a Gold Medalist in B.A.(Hons). Sanskrit and also Gold Medalist in M.A. Sanskrit. He was a Part-time NCC officer at DRVDAV College Phillaur from 1986 to 1995 for ten years. Further, he was a Writer of Six Research Books in the field of philosophy, philology, literature, linguistics in Sanskrit Subject and Edited Three Books on Issues and Challenges in Higher Education and Social Aspects in Contemporary Literature) 34 Research Papers have been published in different Referred National and International Journals of repute

HIGHER EDUCATION SYSTEM UNDER NEP 2020

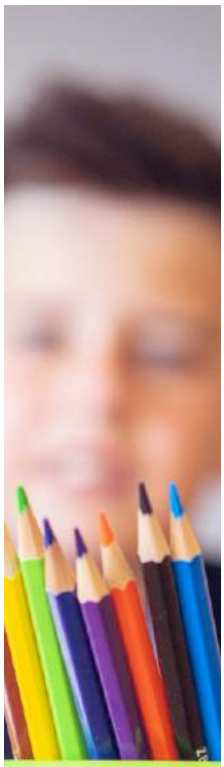
DR. RAJ KUMAR MAHAJAN, REGISTRAR AT
GNA UNIVERSITY, PHAGWARA

INTRODUCTION:

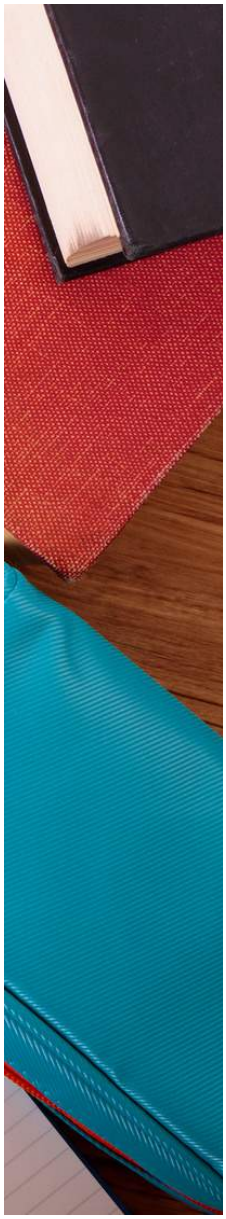
The world is undergoing rapid changes in the knowledge Landscape. With various dramatic, scientific and technical advances, such as the rise of big data, machine learning, artificial Intelligence, There is a need for a skilled workforce particularly involving mathematics, computer science and data science in conjunction with multidisciplinary abilities across the social sciences and humanities.

With climate change, increasing pollution and depleting natural resources, there will be a sizeable shift in how we meet the world's energy, water, food and sanitation needs, i.e. the need for new skilled Labour, particularly in biology, chemistry, physics, agriculture, climate science and social science. The growing emergence of epidemics and pandemics, a call for collaborative research in infectious disease management, development of vaccines is the need of the hour.

There will also be a growing demand for humanities and art as India moves towards becoming a developed country and among the three largest economies in the world. Therefore, we must be aware of the fundamental Principles of NEP to be inculcated for the new system of education.



FUNDAMENTAL PRINCIPLES:-

To recognise, identify and foster the unique capabilities of each student, there is a need for flexibility according to their talent and interest, such as no challenging separations between arts and sciences, curricular and extracurricular, Vocational and academics; however, the primary stress will be on multidisciplinary and holistic education with an emphasis on conceptual understanding, creativity and critical thinking, Ethics and human and constitutional values. There is a need of promoting multilingualism and the power of Language, life skills, and it will be focused on regular formative assessment for learning with extensive use of Technology.

In all curriculum, respect for diversity and the local context should be there with total equity and inclusion, synergy across all levels of education. Teachers and faculty considering as the powerful tool of education, and as the heart of the learning process, Autonomy, good governance and empowerment, Outstanding Research, however continuous review are the main objectives and principles of teachers as education is a public service with substantial investment in a robust, vibrant public education system.

SCHOOL EDUCATION:-

In school education, 10+2 is modified into 5+3+3+4 covering ages from 3 to 18 as Age 3-6 aangawadi/ preschool, age 6-8 foundational class, age 8-11 as a

HIGHER EDUCATION

In higher education, in NEP, an institution must have 3000 or more students, and the higher education system will be divided into the following categories of institutions.

1) Teaching intensive Universities,
2) Research-Intensive Universities,
3) Autonomous degree-granting colleges,
4) Constituent College of a university.

There will be multidisciplinary higher education till 2030, as mentioned in NEP, Increase in vocational education from 26.3% to 50% by 2035, the start of open distance learning (ODL) and online programs giving more emphasis on scientific, vocational, professional, soft skills, in collaboration with liberal arts such as humanities, languages, social sciences etc.

There will be a one-year certificate course, two-year diploma, three-year degree, four-year degree with research as a significant area. For a four-year degree with study, a Master's degree will be of one year; however, for a three-year degree, a Master's degree will be two years in NEP. Similarly, in teaching education, there will be four years integrated B.Ed. As well as two years B.Ed. after Bachelor degree of three years and one year B.Ed. after Bachelor degree of four years.

Academic bank of credits will be a significant concern in NEP where student can add their credit by opening an account in the educational bank of credit (ABC). In higher education, the following programs can be included such as languages, literature, music, philosophy, Indology, Art, dance, theatre, education, maths, stats, pure and applied sciences, engineering, Aw, sociology, economics, sports, translation and interpretation, Ayush, Yoga, History, culture, Modern India etc.

Environmental Education, climate change, pollution, waste management, sanitation, conservation of biological diversity, control of natural sources and biodiversity, forest and wildlife conservation, sustainable development and living etc., can be added as part of the syllabus.

Value-based Education, development of humanities, ethical, constitutional, universal human values of truth, righteous conduct, peace, love, non-violence, scientific temper, citizenship Values, life skills, lessons in service and participation in community service programs can be the part of the syllabus.

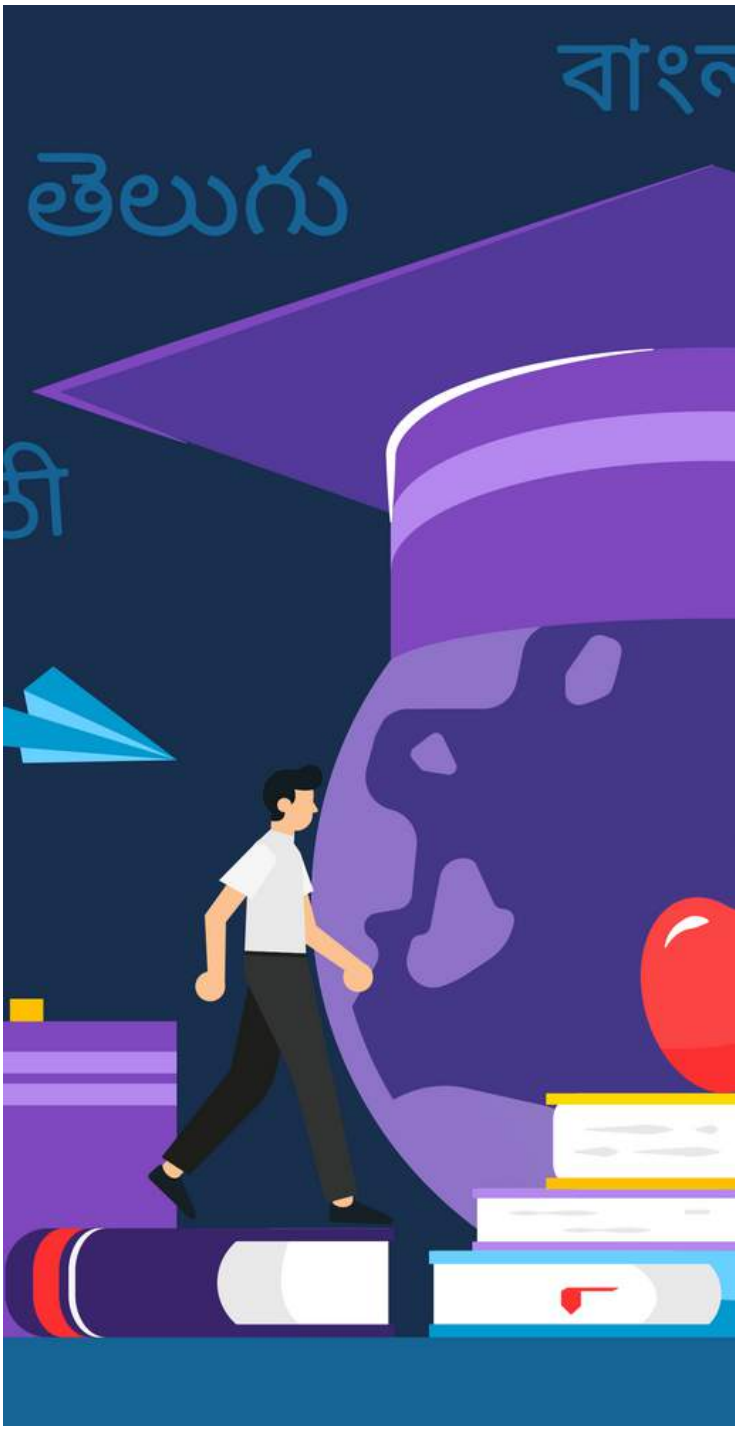
In NEP, MERU (multidisciplinary education and research universities) shall be established in which startup incubation centres, technology development centres, Centres in Frontier areas of research, more significant industry-academic linkages, interdisciplinary research including humanity, social sciences research, research in areas of infectious diseases, epidemiology biology, diagnostics, instrumentation, vaccinology shall be established to promote research in all fields of higher education. Research internships with local industry, businesses, artists, craft persons etc., will be part of the syllabus for the students of 4-year degree with research.

For quality learning, curriculum pedagogy, continuous assessment, student support is a must along with qualitative libraries, classrooms, labs, technology,

For quality learning, curriculum pedagogy, continuous assessment, student support is a must along with qualitative libraries, classrooms, labs, technology, sports/ recreation areas, student discussion rooms, dining areas as the best infrastructure with ultra-modern facilities.

For international and global participation of students, the institution has to establish an international student office and should plan MOU's with foreign countries, business houses and should have industry linkages for worldwide internships and global placement of students.

In the end, It can be summarised that in NEP, a major concern is on motivated energized capable faculty, government steps for Grants, establishment of National Research Foundation, reimagining vocational education, professional education, agricultural education, legal education, healthcare education, technical education, adult education and lifelong learning, promotion of Indian languages, arts and culture, use, of technology and integration, online and digital education. NEP put major stress on multidisciplinary holistic education with vocationalisation and technical development in every institution with the motive of standardized and qualitative education to compete for the global world.



FELA
FEDERATION OF EDUCATION LEADERS & ADMINISTRATORS

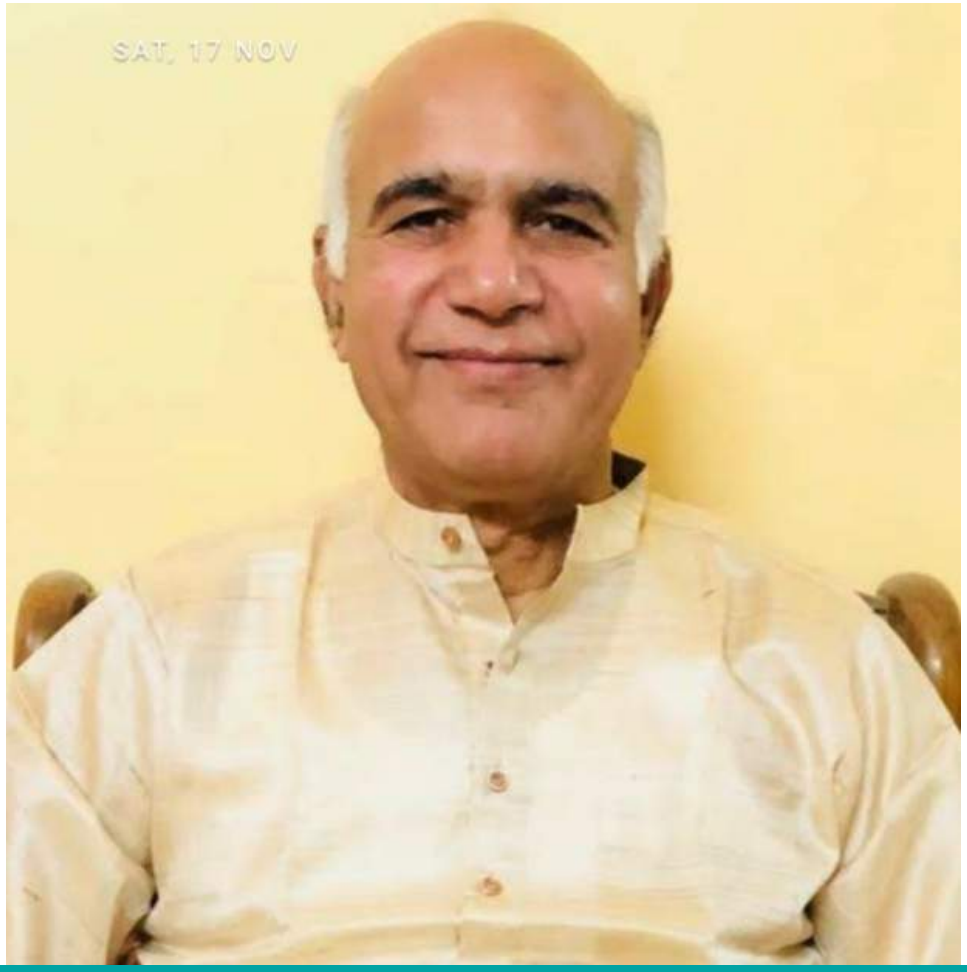
"CULTIVATION OF MIND SHOULD BE THE ULTIMATE AIM OF HUMAN EXISTENCE"

DR.B.R.AMBEDKAR

Prof. (Dr.) Chattar Singh

Prof. (Dr.) Chattar Singh is a well-known social scientist and a political analyst specializing in regional studies. Having done his master's degrees in History, Mass Communication and Laws, he was awarded a PhD degree in Modern History from Kurukshetra University. He taught for 36 years before retiring as Professor and Chairman of the History Department in 2012. Now he has 41 years of experience in academic administration in Govt. and private sectors in the education industry.

He worked, after that, as Registrar of a renowned international university in Greater Noida, where he recruited the faculty and paved the way for faculty to get UGC pay scales. He was in charge of general administration and H.R. too. He was founder Director of Schools of Social Sciences, Law, Management and Fine Arts. During his short stint, the University organized YoYo Honey Singh Night at a grand scale. The University also became a partner in the IPL with the Punjab Kings XI team.



SPECIAL EXPERT WRITE UP ON

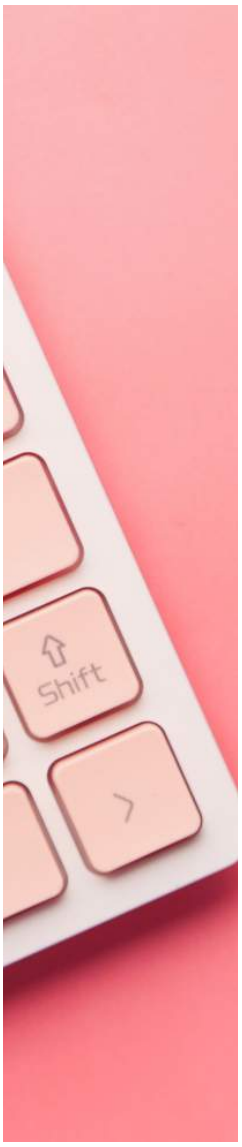
PLAGIARISM IN HIGHER EDUCATION AND RESEARCH

BY PROF. DR CHATTAR SINGH VICE-CHANCELLOR OF RAI

TECHNOLOGY UNIVERSITY, BANGALORE INDIA

About thirty years back, when I was going through the contents of two chapters of the PhD thesis Of my student, I experienced a pleasant surprise to read the contents meant for editing. I visualized that somewhere I had similarly read these contents written by this scholar as from an "original" source. After a pause, I could recollect that the contents were from my PhD thesis, which this scholar had issued from the university library and then resorted to 'cut-paste technique. When confronted, the scholar confessed that he had borrowed a copy from my thesis, that too without any reference or acknowledgement. "Only you know this, none else", he quipped. Those were the days of plagiarism in abundance in research works.

After the UGC directives to submit a soft copy of the thesis and hard copies to the University for evaluation, this task has become hazardous with the availability of many tools for detecting plagiarism in research work. The Google Baba has an abundance of content uploaded by scholars worldwide on many topics concerning everything. The detecting tools may expose the cheating done by the scholars/writers using others' contents claimed as their own and 'original'.



The announcement of the Government of India's education ministry for making PhD degrees mandatory for university teachers has boosted the ongoing registration and completion of PhD, and hence to the plagiarism too. There are some tools and techniques for those who opt for English to detect and track plagiarism, but 'copy-paste procedure is still a boon to regional and vernacular languages research works. There is a shortage of tools to detect plagiarism in languages other than English. Only one device is available so far, which can detect plagiarism in almost 200 languages globally, and examiners and universities rarely use it. Many reputed universities and research institutions are using their tools to gauge the level of plagiarism of any PhD thesis before it is sent for external evaluation.

There are various tools to capture the contents of copies from sources available on websites, reflecting the extent of dishonesty used by the scholar. Amongst the devices which are frequently used are Plagiarisma,

plagiarism checker, QueText, CopyText, DupliChecker, PlagiarsmHunt, Plagium, PlagScan, PlagTracker and others which can find a copied text from various files like Txt, HTML, Doc, Docx, PDF, RTF, PDB, XLS, ODT etc. These tools can segment the original part from the copied portion in red colour or red underlined text. It is pretty enough to show that the scholar has created the actual contents or the cut-paste contents. In many universities abroad, every department must have its text detecting tool to curb the menace of cut-paste not only in PhD thesis work but also

in MPhil dissertations and other works mandatory for any postgraduation degree. Indian universities and other research institutes must make it compulsory to process every research work scan under any practical tools to check and curb plagiarism.

But the worst part in curbing plagiarism is when the professionals have come to the rescue of plagiarism with many tools that relieve the dishonesty of contents from this charge of plagiarism. IT professionals have discovered and designed new tools like Spinning, Quilbot, Paraphrasing, Hosterina.com, Sujoydhar, Azsectools, Prepostseo, SentenceRewriter and CoderDuck etc. Some of these tools are available online and offline, too; some are free, some are paid, some have limitations of several pages, and some are boundless. Some are for students, researchers and professionals, and others are for business purposes.

With such alternatives, one can escape the charge of plagiarism in any research work, particularly the soft subjects and others like Humanities, Social Sciences, Law, Management, Agriculture etc. The 'theft' of contents in research works has sped up with the compulsion of possessing a PhD degree by hook or crook, from any university worth name. The research work in universities and institutions must be put to standardization with some parameters of internationalization.

There is a dire need to revisit the thought of making PhD compulsory for university teachers because the Teacher is for Teaching and not research work. Others are devoted to research work, and they must be allotted research projects mainly with some classes for them to interact with researchers and students to share their new findings. Research work must be made available to the people for which it was designed and other interested people to enhance their knowledge. It must be available in regional and other vernacular languages for the benefit of expected beneficiaries. Keeping stacked PhD theses in glass window almirahs is of no use nor its funding. There is also a need to curb the plagiarism of Bhai-Bhatijawad and Guru-Chelawad's funding institutions so that honest researchers are not deprived of using their potential and talent for the country's sake.

Professor Dr. Manjula Jain

Prof.Manjula Jain holds a Masters degree and a Doctorate in Management. She is UGC-NET(Management) qualified and was conferred the gold medal for securing the first rank in MBA in the University. She has a rich experience of 21 years in teaching and research. She is currently working as Associate Dean-Academics, Teerthankar Mahaveer University, Moradabad. She has worked in various academic positions including Dean and Director for a reputed University.

NATIONAL EDUCATION POLICY: EDUCATION THROUGH TECHNOLOGY

DR MANJULA JAIN
ASSOCIATE DEAN ACADEMICS, TEERTHANKER MAHAVEER UNIVERSITY, MORADABAD

DR GEETANSHU DAWAR
PROFESSOR, TEERTHANKER MAHAVEER DENTAL COLLEGE & RESEARCH CENTRE, TEERTHANKER MAHAVEER UNIVERSITY, MORADABAD

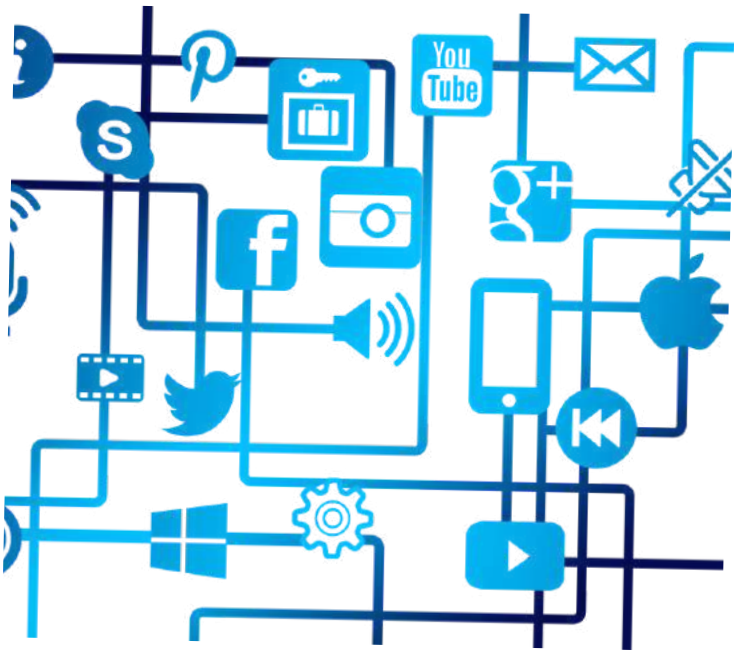
The world is under constant change and evolution owning to the advances in social, economical, scientific and technological innovations. To walk hand in hand with the advancing age the set of skills one has needs to be upgraded. Hence to fulfil the requirements certain changes were needed at the level of professional training and higher education.

The New Education Policy (NEP) was approved in July 2020 by the Union cabinet with the sole purpose of universalizing education from the basic pre-school to the secondary level. The NEP-2020 replaced the existing National Policy of Education-1986. It is an inclusive framework that will focus on the elementary to a higher level of education in India.

Technology in Education

Technology plays a crucial role in the upgrading of educational processes and outcomes; hence, the association between technology and education is bi-directional.

The National Educational Technology Forum (NETF), an autonomous body is being constituted to house a platform that will be a one-stop-shop to deliberate and chart the use of technology through all levels of education.



Education should be imparted with a view to the type of society that we wish to build. We are working for a modern democracy built on the values of human dignity and equality.
–

Dr Sarvepalli Radhakrishnan

echnology-based educational platforms, such as DIKSHA/SWAYAM will be incorporated for online training of teachers to standardize the training procedure for the benefit of HEI'S.

Online Education and Digital Education

As the saying goes that "Necessity is the Key to Invention" esp in the recent COVID 19 this has been justified. A complete set of recommendations for encouraging and assisting online education resultant to the recent rise in epidemics and pandemics in order to prevent hindrances in the smooth flow of quality education at all times has led to the implementation of online education. Institutions shall have the option to run Open Distance Learning and online programmes. A unit devoted to the purpose of building digital infrastructure, digital content and capacity building will be created in the Ministry of Education (MoE) to look after the e-education needs of both school and higher education.

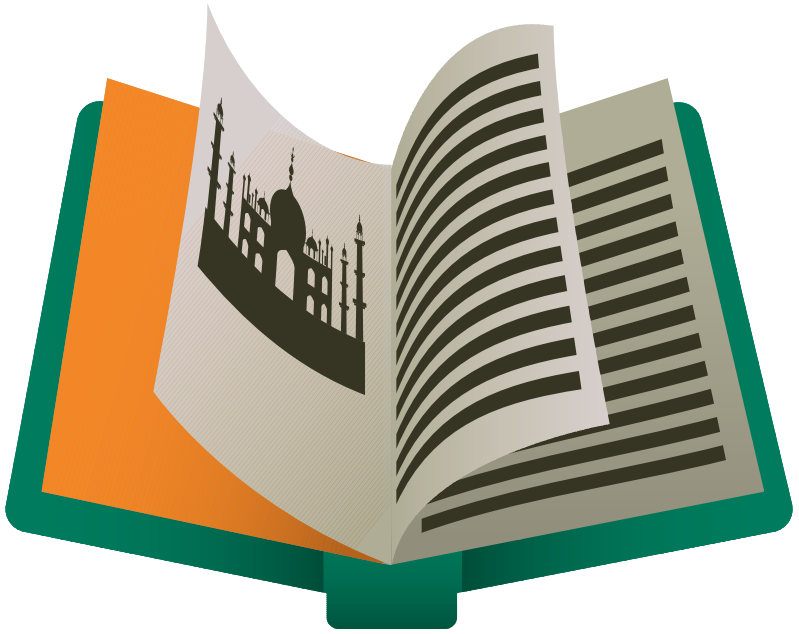
Adapting to the AI

The policy acknowledges issues that have arisen as a consequence of the extensive use of artificial intelligence and highlight the need to acclimatize to the changes that have taken place due to the increased use of AI across sectors. It has entrusted the NETF with elucidating and categorizing upcoming technologies based on their "potential" and and "estimated timeline for disruption," and presenting a regular analysis to the MHRD, which will be able to then officially classify those technologies that necessitate suitable responses from the educational system.

Digital India

The policy emphasizes the need to invest in digital infrastructure geared towards the development of online teaching programmes, virtual labs and online repositories. It also elaborates on training teachers to become experts at creating and delivering content via online mode.

It envisages the requirement for the creation of digital infrastructure throughout all the Higher Education Institutes to facilitate education anywhere and at any time.



Key Concerns

The availability of computers and uninterrupted internet facilities esp in rural areas.

Accessibility to digital hardware is much lesser in rural areas as compared to urban areas.

Problems such as a continuous power supply, basic infrastructure and general awareness about digital education and its usage.

Conclusion

The policy is novel in its approach and is impressively a progressively reforming document that acknowledges the priceless contribution of technology in assisting learning and teaching. It is necessary to build an articulated plan of action for nurturing technological expertise to support in thriving engagement with technology and its upcoming advancements.

However, the “human element” of education cannot be overlooked and technology can be used as a supporting tool to intensify the learning experience.

The Policy is conscious that education in the future will need to encompass a vast dematerialization and digitalization of content. For the traditional approach towards education in India, this Policy is about to bring about major reforms in the future Educational system.

HYBRID EDUCATION: THE NEW WAY OF SAFER AND EFFECTIVE EDUCATION

DR. NARESH RAKHA, PH.D (ENGLAND, PDF (FAO), PDF (JAPAN)

{EXPERT, FEDERATION OF EDUCATION LEADERS AND ADMINISTRATORS; B ADVISOR, MISSOURI STATE UNIVERSITY, US; ADVISOR, TECHNOLOGY INNOVATION HUB, IIT ROPAR AND D MENTOR, GOOD UNIVERSE, UNDP- PROGRAM ON ENVIRONMENT HEALTH. FORMER DEAN (PGS), LUVAS, HISAR}

AND

DR. KHUSHBOO RAKHA

{ASSISTANT PROFESSOR, DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING, INDIAN INSTITUTE OF TECHNOLOGY, ROPAR (PUNJAB).

Education administrators, teachers and students all over the globe felt helpless when COVID-19 pandemic forced the lockdown early 2020. Academic institutions were least prepared for such an eventuality. Coronavirus or Zika virus scare; natural calamities like floods, fires, heat wave and cold wave or may it be man-made pollution and road closures, future will not be like the past. There are going to be interruptions in class room teaching and hands-on work learning.

Hybrid education is emerging as a new tool which is trying to take the best features from classroom teaching and on-line teaching. Hybrid education is teaching and learning that includes in-person learning and virtual learning using hybrid classroom tools like Learning Management Systems, Video Conferencing and Asynchronous (self-paced) learning. Hybrid classrooms incorporate a live streamed video of in-person class activities that serves as a two-way conversation, integrating remote and in-person students in single environment.

During the COVID-19 pandemic, hybrid learning and virtual learning provided an option for continuing education when, for a majority of the world, there was no alternative. Several studies have been conducted to assess the feasibility of standardizing the hybrid teaching: process and procedures. The study results, summarized below were eye-openers. Hybrid learning improved students' academic performance in reading and understanding and thus can be incorporated more easily in hybrid classrooms. It increased student engagement, achievement, and a positive view of the learning process for students.

Benefits of hybrid education?

1. Accessibility

Hybrid education offers accessibility to students and teachers, on a local and global level. With hybrid education, students can access lessons no matter their physical ability or location. Virtual learning is a cost-effective option for many learners. Hybrid education provides opportunities for specialized education and tutoring.

2. Safety:

During the COVID-19 pandemic, teachers were concerned about their safety and their students' safety. A survey results indicated that 99% of teachers reported that a safe and healthy classroom is their top priority, but 66% felt that their institute did not take enough precautions for their well-being. Hybrid classrooms provide the flexibility and safe option for teachers & students to stay home when they are sick, reducing the spread of infection.

3. Cost efficiency

Hybrid learning helps institutes maintain a budget and helps students to access more cost-effective courses online. Hybrid learning staples like digital textbooks are also a more cost-efficient solution.

4. Alleviation of teacher shortage

During a pandemic, many a short-staffed Institutes contracted a company that supplied remote teachers who taught lessons virtually, while students tuned in to live classes on laptops. There is always a shortage of teachers and HL provides more opportunities for teachers to reach more

Better parental involvement

Live virtual learning and class live streams are a new option for parents. Parents too can attend live courses with child and see how they interact in classroom. Parents will be more involved with student's education plan.

6. Students' involvement

Research shows that students perform better when they are engaged in the classroom. Hybrid learning presents a new way to engage students in class, using live video conferencing platform features like polls and quizzes, interactive virtual demos, and a blend of synchronous and asynchronous learning.

7. Facilitates the teaching

Faculty, in general, favors hybrid education, provided adequate resources and funds are made available. Teachers had better insights on students than before. Teachers could identify students having difficulty. Teachers are able to better hold students accountable; easily provide alternate learning methods like providing a recorded lecture for self-paced review. This mode offers safe options for teachers with health conditions to continue teaching. Improving parent-teacher relationship with a better understanding of students' home lives and where they need support. Teachers learn more about setting up and managing a hybrid class environment.

Facilitates learning

Students can access a variety of learning resources. With tools like learning management systems and digital textbooks, students can review course materials at their own pace and involve parents in the online learning process. Hybrid classrooms facilitate engagement between students in the school and students at home, creating a more equitable learning environment for remote students that were previously unavailable. There will be better dialogue between students, teachers, and parents, more time for students to learn at their own pace or on their schedule, and various learning methods for students to choose from.

Limitations and Issues with hybrid education:

1. Testing and examination are better conducted offline since, in hybrid mode, students would prefer online tests from the convenience of their homes, with minimal supervision from teachers.
2. Not all students have access to the devices and high-speed Wi-Fi they need for effective online learning.
3. There will be several difficulties in a practical demonstration in Medical and Engineering courses.
4. Some students may prefer in-person based learning because of distractions at home.

1. In online learning-only scenarios, students with learning disabilities may also lack their in-person tools, specially trained classroom aids, games, or other devices that are available in the classroom.
2. There are concerns about socioeconomic inequality when it comes to e-learning, and parental support, which varies greatly among students learning from home.

Road map for future hybrid education

For Institutions:

1. Institutes of higher learning should make more investments in hybrid learning tools like video conferencing, cameras and microphones.
2. Many experts have suggested that a more flexible institute day with a combination of in-person classes and virtual learning that better matches up with students' circadian rhythms might be an anser to better engaging students.

For State/ Central Government:

1. To facilitate offline examinations and test, inter institutional network of examination centers will cater the students' access to examination center at their convenience.
2. Govt. Education departments can connect all institutions of higher education in the state for this purpose.
3. Verification of quality and regulation of curricula by Govt. Institutes and private players.
4. Regulation of fee and honorarium.
5. Facilitate access to internet/ Wi-Fi. Hire agencies to provide gadgets and digital information.

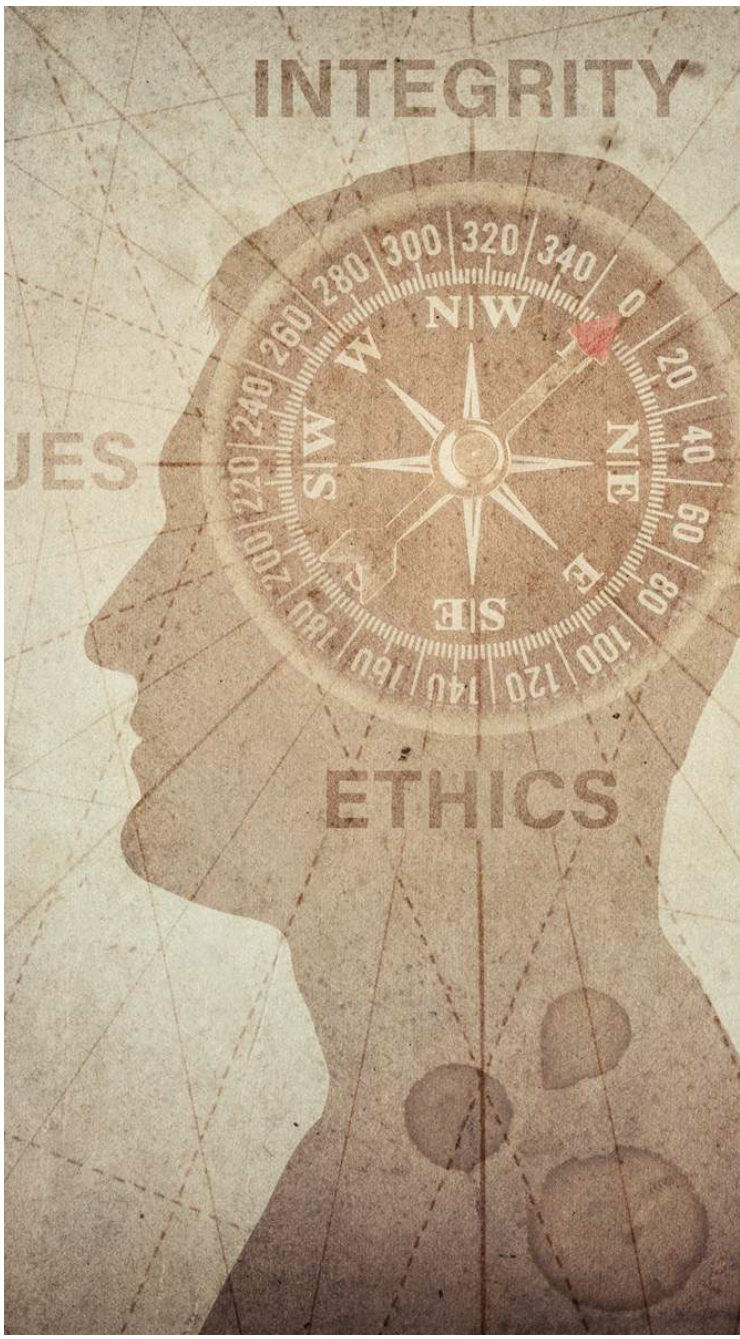
Prof. (Dr.) Ramanjeet Singh

Prof. (Dr.) Ramanjeet Singh, Dean (Marketing, Planning and Corporate Affairs), and Dean School of Legal Studies are exceptional personalities that OSGU has had the honour to accommodate. He is reputed in his field, and the noteworthy quality of his knowledge is greatly reflected in his writings.

BUSINESS ETHICS IS THE APPLICATION OF ETHICAL VALUES TO BUSINESS BEHAVIOUR

BY DR RAMANJEET SINGH, DEAN OF MARKETING, PLANNING AND CORPORATE AFFAIRS AT THE OM STERLING GLOBAL UNIVERSITY, HISAR

Business ethics carries a significant influence in the corporate world. Not only does it change how businesses operate on a day-to-day- basis, but it also influences legislation around corporate regulation. Find out what business ethics is, why it is important, and how you can spot ethical and unethical behaviours in the workplace.



Business Ethics – Meaning

Business ethics is the study of how a business should act in the face of ethical dilemmas and controversial situations. This can include a number of different situations, including how a business is governed, how stocks are traded, a business' role in social issues, and more.

Business ethics is a broad field because there are so many different topics that fall under its umbrella. It can be studied from a variety of different angles, whether it's philosophically, scientifically, or legally. However, the law plays the biggest role in influencing business ethics by far.

Many businesses leverage business ethics not only to remain clean from a legal perspective but also to boost their public image. It instils and ensures trust between consumers and the businesses that serve them.

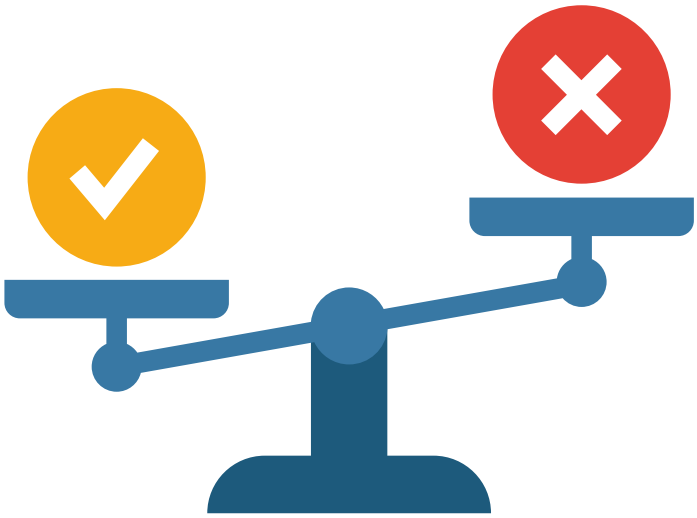
The modern idea of business ethics as a field is relatively new, but how to ethically conduct business has been widely debated since bartering and trading first arose. Aristotle even proposed a few of his own ideas about business ethics.

However, business ethics as we know it today arose in the 1970s as a field of academic study. As part of academia, business ethics were both debated philosophically and measured empirically. As this field of study became more robust, the government began legislating leading ideas in the field into law, thus forcing businesses to abide by certain rules and regulations that were deemed ethical.

Business Ethics – Importance

Business ethics are important for a variety of reasons. First and foremost, it keeps the business working within the boundaries of the law, ensuring that they aren't committing crimes against their employees, customers, consumers at large, or other parties. However, the business also has a number of other advantages that will help them succeed if they are aware of business ethics.

Businesses can also build trust between the business and consumers. If consumers feel that a business can be trusted, they will be more likely to choose that business over its competitors. Some businesses choose to use certain aspects of business ethics as a marketing tool, particularly if they decide to



highlight a popular social issue. Leveraging business ethics wisely can result in increased brand equity overall. Being an ethical business is also highly appealing to investors and shareholders. They will be more likely to sink money into the company, as following standard ethical business practices and leveraging them properly can be a path to success for many businesses.

Following business ethics can also be beneficial for the business's employees and operations. Attracting top talent is significantly easier for ethical businesses. Employees not only appreciate a socially aware employer but will also perceive them as the kind of business that will act in the best interest of their employees. This produces more dedicated employees and can also reduce recruitment costs.

Business Ethics – Types

Business ethics as a field of study is incredibly diverse, but many concepts can be divided into a

few basic principles. Every business should strive to follow these guidelines in the pursuit of success.

Trustworthiness

Achieving trustworthiness typically involves being transparent and honest in all actions and communications. Being trustworthy can have a positive impact both internally and externally. Consumers appreciate openness, as it provides them with insight into how a business operates and conceptualizes its work. Employees also appreciate this quality in a company that they work for.

Respect

Showing respect for employees and customers involves following through on all promises — and providing sincere apologies and appropriate compensation if anything falls through. Showing a lack of respect will deter customers from engaging with a business and lower a business' reputation. It will also do significant damage to employee morale and increase turnover.

Fairness

Treating customers and employees with a sense of fairness and justice is a crucial type of ethics. Manipulative behaviours aren't just unethical, but they are also unhelpful — and the top priority of any business should be to be helpful to its customers and employees. It is also essential to treat all people equally.

Caring

Businesses, at the end of the day, are composed of human beings. There are human beings that consume goods or services from the business, and then there are human beings that work to produce those goods or services. Being open to their struggles and coming to the table with solutions will show empathy — a valuable tool for any business to utilize. Showing a sense of caring and keeping the lines of communication is not just the ethical thing to do, but can also boost internal and external perceptions of the business.

Ethical Behavior in the Workplace

While understanding the basic principles of business ethics is essential, it is arguably more important to know how these ideas apply to day-to-day business operations. Here are some examples of how ethical behaviours can be practically used.

Putting Customer Needs First

Companies that build their workplace culture around putting customer needs first and hiring people who engage in this behaviour participate in ethical behaviours. For example, suppose a customer comes into a store looking for a product that meets particular needs. In that case, it's essential to provide them with the best product for the situation described instead of upselling them or encouraging them to buy a product that won't meet their needs. However, it is essential to ensure that the "customer first" attitude does not unintentionally result in the unethical treatment of employees — such as encouraging them to work more overtime than allowed, forcing them to endure abuse from customers with no safe way to escape the situation and more.

Being Transparent

Transparency and clear communication are paramount when it comes to ethical workplace behaviours. Employees and consumers alike should never be lied to or told untruths, breaking trust within the business. For example, when faced with a public relations crisis, companies should call a meeting and address the problem directly with their employees. It's important to truthfully describe the situation as it unfolded, present solutions, and accept criticism humbly.

Prioritizing Workplace Diversity

Part of being fair is providing everyone with an equal opportunity to be employed at the company. While there is much political debate around how to create workplace fairness, it is undeniable that providing equal opportunity for employment to every applicant is an ethical standard. For example, if someone notices that management tends to hire the same type of person, they may suggest getting employees more involved in the hiring process. This will introduce different perspectives to the hiring process and increase the possibility that different kinds of applicants will be selected for a position.

Respecting Customer Information

Many businesses collect the personal information of their customers, whether it's payment information, health information, or similar. One of the priorities for any business should be securing and protecting this information. For example, a hospital may create and enforce aggressive policies around staff sharing patient information on social media. Having an employee share this kind of information on their personal accounts is not only disrespectful of the patient's privacy but could also put the hospital at risk of violating various government regulations.

Providing Resources for Reporting Unethical Behavior

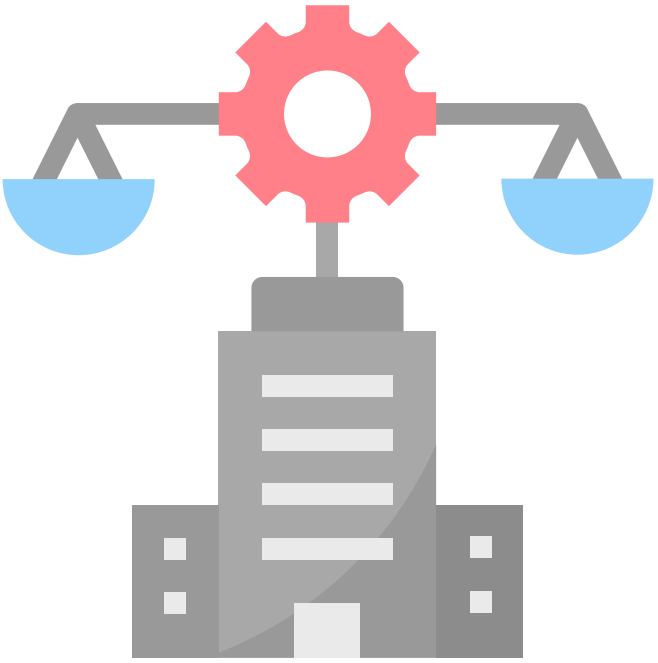
If an employee notices unethical behaviour in the workplace, they should have an outlet to report these behaviours. The business is responsible for putting this infrastructure in place and designing it in a way that insulates the employee from harm. For example, a research university should have a neutral office of compliance that is organizationally detached from the research arm of the institution. This provides a neutral space where academics can report unethical studies or harmful practices without fear of workplace repercussions.

Unethical Behavior in the Workplace

Just as it is important to understand how to practically apply ethical behaviour, it is equally important to understand what qualifies as unethical behaviour. Here are some examples of what unethical situations can look like in the workplace.

Taking Sides in an Employee Argument

It is not uncommon for conflicts to arise between employees in the workplace. Ethically, it is the job of company leadership and management to remain impartial during these conflicts. For example, if two of a manager's employees are in conflict, it is important for the manager to remain as neutral as possible. When a manager gives preference to a favourite or senior employee or provides a solution that only works in favour of one party, they are participating in unethical behaviour.



Lying

Lying to your employees or customers is the biggest way to break trust. Trust is the best source of dedication and loyalty that any business has. Once that trust is broken, it is extremely difficult to get it back. For example, if a company has a high-performing employee who is asking for a promotion, they may say that there is no room in the budget for a promotion this year. A few months later, another employee may receive a promotion. Telling obvious lies isn't just unethical — it will drive people away from your business.

Misusing Company Time

This is a common ethical dilemma that many businesses face. Many employees misuse company time in a variety of ways, whether it's surfing the internet during business hours, taking extended breaks, altering timesheets, or similar. Misusing company time is unethical because the employee is being paid a salary for work that they did not complete or time they did not dedicate to their job.

Cultivating a Hostile Workplace

While there is bound to be some conflict in the workplace, it is important to make the workplace a safe environment for everyone. Some companies unintentionally cultivate hostile or overly competitive company culture. For example, employers may encourage an unhealthily competitive environment among employees to drive productivity and innovation. However, cultivating this kind of environment can tax employee mental health, and even encourage unethical, sabotaging behaviour among employees who want to get ahead at work.

Ignoring Conflicts of Interest

Conflicts of interest encourage businesses to act in ways that do not benefit their customers or employees. For example, if a manager has a relative as their direct report, that manager may treat that employee differently than their other reports. It is the duty of the business to address this situation. Removing conflicts of interest can become more complex when a business is publicly traded, non-profit, or receives funds from a government entity.

Prof. (Dr.) Victor Gambhir

Victor Gambhir is the President/ Vice-Chancellor at JECRC University. He has completed two World Bank Assisted Projects, namely Technician Education Development Project in Haryana and Technical Education Quality Improvement Programme for Engg Colleges, including Project Management, Procurement and Implementation. Professor Gambhir has handled Academics and Development's work, including establishing new institutions, starting new courses, curriculum development, State Admission and Fee Committee, and legal matters. He has Organised Workshop training for Polytechnics and Engg College students, Teaching Polytechnic, B Tech and M Tech students and Research and Education Management at the level of Polytechnics, Engineering College and University. In his professional career, he has dealt with UGC, AICTE, Dental Council of India, MHRD GoI, NBA and NAAC

MAKING INDIA AI-READY THROUGH THE NATIONAL EDUCATION POLICY 2020

BY PROF. DR VICTOR GAMBHIR, VICE-CHANCELLOR
OF JECRC UNIVERSITY, HARYANA

The government launched the National education policy to change India's education system and make it skill-based and technology-driven. The education policy has come as a much-needed reform after 30 years without any considerable change. A committee of experts and specialists led by the former ISRO chief K Kasturirangan and other experts worked on the policy. Many modifications focused on skilled-based education, and numerous industry experts had welcomed the reconstruction of the conventional education system, which was long-awaited and much needed. This essay will read about how the government plans to implement technology into education through the national education policy and make the students more AI-ready.

NEP as a digital-savvy Education policy:

The new education policy proposes rejuvenating the education system to make the forthcoming generation of students encourage unprecedented innovations while making India an economic superpower. The remarkable scope of the procedure incorporates the use of school systems for adult education courses following school hours, more focus on vocational education, high-quality modules to train sign language and more.

The policy also recommends a dedicated digital and online education unit to develop the digital infrastructure and content.

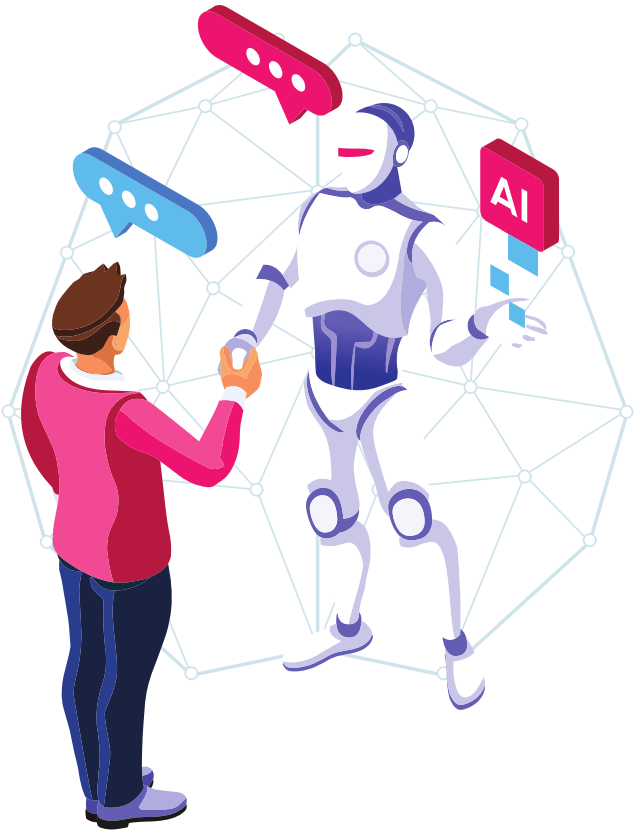
It attempts to create alternative forms of quality training in times like the prevailing pandemic, where conventional education systems waver. It also develops mobile applications, online classes and modules, satellite-based TV channels and more to support faraway education.

The policy focuses on constructing an experiential learning education system, including hands-on learning, integrating sports education, and storytelling-based pedagogy. It also allows students to pick topics in physical education, art and crafts, vocational professions and others.

New Education Policy 2020 and the importance of artificial intelligence

The New Education Policy (NEP) has conceded the value of artificial intelligence and AI learning in today's digital era. It intends to regulate India's education system to the 21st century needs and provide the students for the AI market. The policy highlights the obligation to allow the required technical expertise in every area of education.

School children will grow essential talents such as digital literacy, coding, and computational thinking from a young age through practising up-to-date subjects such as Artificial Intelligence and Design Thinking.



AI in Higher Education:

NEP seeks to integrate Artificial intelligence, 3-D machining, big data analysis and machine learning with undergraduate education to prepare industry-ready professionals for the growing job market. Every university will provide doctoral and Masters programmes in core fields such as Machine Learning and AI. Further, institutes may also offer targeted education in low-expertise jobs for promoting the AI value chain, such as data annotation, image distribution, and speech transcription.

Besides, to make India an advanced knowledge hub of technologies, the National Research Foundation (NRF) will encourage high-quality research in the department of science and technology. Given the increasing applicability and decreasing prices of AI-based forecasts, particular focus has been on developing research in this area. A three-pronged approach has to channel the research in AI, i.e.:

1. Advancing core AI research.
2. Developing and deploying application-based research.
3. Establishing international research efforts to address global healthcare, agriculture, and climate change challenges using AI.

The policy also envisions the application of AI-powered solutions to achieve its intentions of multilingual and holistic learning. Advancing multilingualism among the school students will go hand in hand with enhancing Natural Language Processing capacities for India's diverse languages. In list with the social vision of Digital India, the administration has highlighted the symbiotic association between technology and learning. The transformational mission of India will be catalysed by technological education and research, as presented in the NEP, and advanced tech-driven solutions will reconstruct the pedagogical means.

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Overcoming the barriers in higher education

Professor Dr.Sayalee Gankar

Prof (Dr.) Sayalee Gankar has 29 years of experience in academics and industry. She has experience as Dean – Management (PG), Dean – Academics and Director of two business schools at MIT, Pune. She is a research guide, and eight research students have completed a doctoral programme under her guidance. Worked as Board of Studies Chairman and member at Savitribai Phule Pune University, JKLU, SIU and NIBM. Her areas of expertise are in academic leadership, specializing in areas of Strategic Planning, institution building, Academic Programming & Planning, Developing Policies & procedures, Syllabus Framework, Research, Consultancy, Industry Collaborations, Rankings and Accreditation. She has delivered plenary Academic & Research sessions in Paris, Poland, Dubai, Bhutan, and over 45 Research Publications at the National and International levels are to her credit. She was solicited for International Conferences and attended International Conferences in the UK, Washington, USA and Paris.

NATIONAL EDUCATION POLICY 2020: A MOVE TOWARDS TECHNOLOGY-DRIVEN EDUCATION AND SELF-RELIANT NATION

BY PROFESSOR DR SAYALEE GANKAR, VICE-CHANCELLOR
DY PATIL UNIVERSITY, PUNE, AMBI

Every change encompasses positive and negative possibilities if regarded entirely. This aphorism continues to its absolute essence if we observe the recent COVID-19 pandemic paralyzed the world economy, with India being no exemption. The severe circumstances conferred by COVID-19 presented the policymakers with a chance to understand and unleash the nation's inherent potential and call for 'the Atamnirbhar Bharat' (self-reliant India). Among these, we meet the long-standing need for a distinct educational model in the form of an announcement of the National Education Policy. This article endeavours to place as a medium of change towards infusing comprehensive technological use in education and building a self-reliant India.

Modernizing India's education policy with technology in mind

Digital reconstruction and pedagogical shifts are permanently building new principles of learning and methods for education. NEP 2020 will moreover free the scope for creativity. The educational organizations will have to modernize their infrastructure to provide modern equipment to achieve the curriculum as envisioned in NEP.

NEP mandates all educators and administrators to exercise at least 50 hours of Constant Professional Development seminars each year, refining teaching facilities and methods. NEP envisions an independent body named National Educational Technology Forum to implement interacting ideas and use technology to enhance the teaching-learning practice.

E-learning programs such as DIKSHA, SWAYAM & SWAYAMPRABHA will offer to teach and learn e-content. Blended learning is going to be the complementary mode of education. Teachers will have to equip themselves with the digital know-how to create synchronous and asynchronous lessons.

Such a comprehensive policy that promotes innovation and creativity encourages students to showcase their unique and creative skills and gives them a chance to pursue the same is the need of the hour. It lays the foundation for a better and brighter tomorrow. The Indian Education System should now move towards critical and innovative thinking and problem-solving and emphasize the development of each individual's creative potential. Proper implementation of these reforms will transform India into a global knowledge superpower in the future.

Equity in implementing policy:

For education to be availed as a social good, its easy access at an affordable cost and quality is a precondition. In the collective confinement, when online schools, zoom classes and digital textbooks are new standards, the sector witnessed some glaring inadequacies. Millions of children were deprived of access to connectivity or devices due to poverty or dismal infrastructure.

Apart from the unfamiliarity and discomfort of the disadvantaged students with digital platforms, the sudden transition also posed challenges for teachers not equipped with information and communication technology skills. The lack of content in vernacular languages is another issue.

Unless addressed urgently, the digital split may disrupt learning, especially among the vulnerable and marginalized, and undo some hard-won gains, particularly in school enrolments/girl child education.

Access to education loans from banks and financial institutions are a great support in the cause of education, notably higher education. However, the lenders generally do not favour the segment due to increased delinquencies and the absence of collaterals.

Education is on the concurrent list of the Constitution. All states, therefore, have an equal say on the subject. A cooperative and collaborative spirit will thus be critical to realizing the goals. The Centre has a task well cut for building consensus on NEP-2020 to ensure its effective implementation.

Notwithstanding the challenges, the Centre's policy push, states' support, corporate commitments and value addition by other stakeholders can usher in a significant transformation in the sector. The domain of education in the country has lit up. And this augers well not only for the industry but also for the 21st century aspirational India.

Professor Dr.Sunil Rai

Dr. Sunil Rai is the Vice-Chancellor of the University of Petroleum and Energy Studies (UPES). A veteran academician, he has a vast experience of 42 years with 19 years in academics, 21 years with the Indian Navy and two years in the corporate world. In his illustrious career in academia, Dr. Rai has become known for designing and implementing plans that transform organizations. He has been instrumental in building some of these universities into huge brands – through implementing processes, developing and nurturing their staff and obtaining accreditations for them.Dr. Rai has been rated as the best faculty for eight years in succession at national and foreign campuses. He has an eclectic mix of management, engineering and performing arts as part of his professional journey. His research interests comprise technology-enabled - people-driven change management and organizational development. A proven thought leader with unbridled enthusiasm for work, he has published papers on Business Continuity and Higher Education in various journals and published articles in management magazines & abusiness education columns in newspapers. An excellent communicator and a prolific speaker, he has addressed national & international conferences and has earned accolades for his oratorical skills and public speaking style

NEW EDUCATION POLICY 2020: ASSIMILATION OF CODING AND LOGICAL THINKING IN STUDENTS

BY PROFESSOR DR SUNIL RAI, VICE-CHANCELLOR
THE UNIVERSITY OF PETROLEUM AND ENERGY STUDIES (UPES)

In the 21st century, we are witnessing a significant shift from only understanding the language of humans to understanding the language of machines and computers; computers are beginning to understand human language. In the modernized realm of robotics and AI, coding may be the novel language expressed and experienced by everyone. After 34 years, the MHRD, now identified as the Ministry of Education, has launched the New Education Policy (NEP), elevating traditional methodologies and methods to implement students' more advanced and tech-oriented learning. One of the vital reformations stated in the NEP is the introduction of courses on coding for students from grade 6 onwards. In this essay, we learn about the significance of learning to code from an early age and the challenges in bringing it to practice.

Significance of incorporating coding from an early age

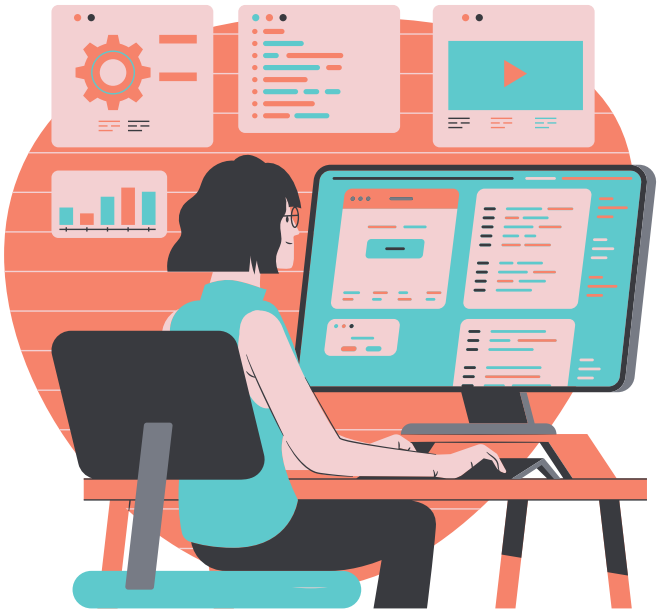
1. Introducing coding and developing exposure to technology at a young age will go a long way in helping the youth lead the way to a modern system of innovation and creativity.
2. It allows youngsters to establish their goals and attain new heights without relying on conventional teaching methods.

1. Exposing students at the K-12 level to superior technology prepares them to accommodate the future techno-environment. Coding is proven to inhabit an attitude of curiosity and questioning in students.
2. It promotes students to investigate, examine, interpret and document everything around them, thus eradicating the traditional classroom learning model, a confining, one-way learning transaction.
3. Coding helps to bloom every part of the child's creativity, whether rational thinking or through art integration, mechanics or logical thinking.
4. It enables children to access the world of new-age technology by giving them a platform to develop apps and games or operate in robotics and artificial intelligence.

How NEP helps the Future Generation innovators

The NEP brings different adaptive modifications and new motives to encourage the Indian education system and develop tomorrow's inventors with holistic education practically. It will support the future generation emphasizing digital literacy, e-learning, and new-age technologies, and it will help bring new learning channels beyond traditional classroom learning.

Whether with online classes and modules, new apps, satellite-based TV channels, and more, it will help expand the range of knowledge and make the curriculum more compliant. It will increase students' choice of courses, educational trajectories, and careers curves based on their ability and interests.



The NEP 2020 will help instil various future-ready characteristics such as competitiveness with disruptive tech, versatility, and the capacity to build a proficient workforce that can command tomorrow's new & grand technologies.

Challenges in implementing coding in Indian Schools:

- Coding knowledge is currently restricted to individuals and communities with laptops, internet connections, and economic capacity. Moreover, extremely scarce content is available in the field fitting for children and likely from the Indian conditions.
- Coding can be 'overwhelming' to young learners with a complex subject, and the shortage of proper curriculum and teacher preparation in the area needs to be addressed.
- The process will further broaden the digital divide between rural and urban India. The fact that India needs subject experts in this domain is clear.

- The National Employability Report (NER) 2019 by Aspiring Minds states that only 4.6 per cent of Indian engineering job applicants can write functionally valid code. But in these classes, we are preparing kids as young as 8-year-old are to learn the skill. Teachers need proper faculty training before venturing into the area.
- For coding classes to succeed, we need to remove it from the superficial level and teach it as any other subject. Schools have already turned towards online platforms and are collaborating for teaching coding.
- Moreover, for coding classes to r, rural India needs to be essential infrastructure and awareness first. "A constant flow of electricity, broadband services, and affordability for the economically weaker section. Only 4.4 per cent of rural households have access to computers, and 14.9 per cent of rural households have an internet facility.

Conclusion:

While the NEP centres on various perspectives, including revising the contemporary curriculum and the demand for advanced childhood care, one of the core ideas of the policy remains the interplay of education and technology. Coding is expected to become an extremely sought-after and in-demand skill by today's youngsters. To provide and furnish them appropriately with the required skills is the most desirable path.

The NEP, with its impressive reforms, is going to be a significant measure advancing in developing coding knowledge in India, particularly for the coming generation. Apart from appealing to various positive developments, it will further help students uncover their real potential as coders and creators of the future.

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