

YK GIST

FEBRUARY 2020

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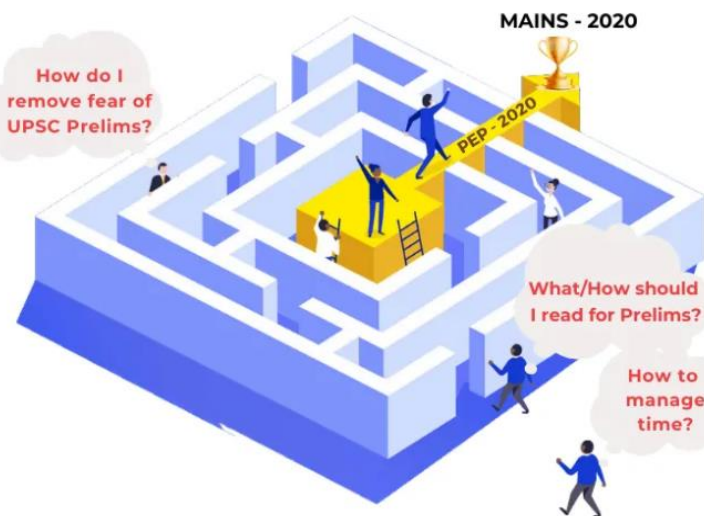


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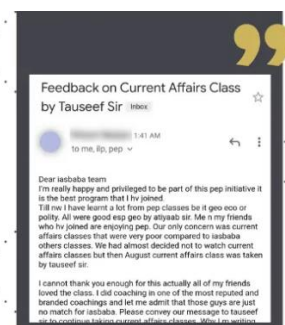
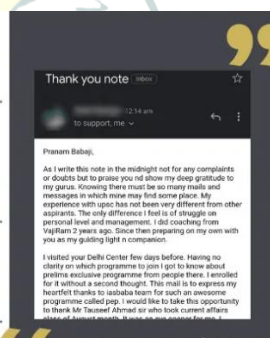
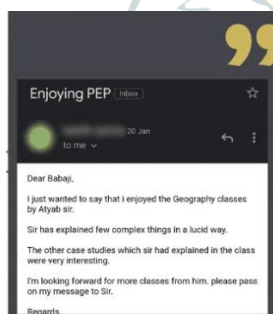
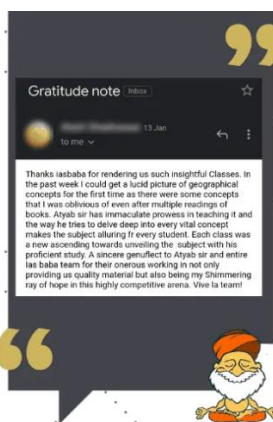
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Preface

This is our 59th edition of Yojana Gist and 50th edition of Kurukshetra Gist, released for the month of February 2020. It is increasingly finding a place in the questions of both UPSC Prelims and Mains and therefore, we've come up with this initiative to equip you with knowledge that'll help you in your preparation for the CSE.

Every issue deals with a single topic comprehensively sharing views from a wide spectrum ranging from academicians to policy makers to scholars. The magazine is essential to build an in-depth understanding of various socio-economic issues.

From the exam point of view, however, not all articles are important. Some go into scholarly depths and others discuss agendas that are not relevant for your preparation. Added to this is the difficulty of going through a large volume of information, facts and analysis to finally extract their essence that may be useful for the exam.

We are not discouraging from reading the magazine itself. So, do not take this as a document which you take read, remember and reproduce in the examination. Its only purpose is to equip you with the right understanding. But, if you do not have enough time to go through the magazines, you can rely on the content provided here for it sums up the most essential points from all the articles.

You need not put hours and hours in reading and making its notes in pages. We believe, a smart study, rather than hard study, can improve your preparation levels.

Think, learn, practice and keep improving!

You know that's your success mantra 😊

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Artificial Intelligence: Challenges and Opportunities for India

Context:

- According to the statistics given by the Human Resource & Development (HRD) Ministry of India in 2016, there is a shortage of 1 million teachers across the country. In the case of Universities and Colleges, there is a chronic shortage of faculty and the problem of finding qualified people to fill this gap has become even more complicated.
- In such a scenario, how can India, a country with the second largest population in the world, cope with the challenge of providing quality education to all?
- Several education experts are saying that our system needs a revolutionary technological intervention. An intervention that would make it more inclusive and accessible. Bringing Artificial Intelligence (AI) to the classrooms in India might just be the solution that we have been looking for.

AI can be described as a system's ability to learn and interpret external data via software/algorithms or machines/devices for problem solving by performing specific roles and tasks currently executed by humans.

The AI has the ability to overcome some of the computationally intensive, intellectual and perhaps creative limitations of humans. Therefore, it opens up new application domains within manufacturing, law, medicine, healthcare, education, government, agriculture, marketing, sales, finance, operations and supply chain management, public service delivery and cyber security.

AI in the Education Sector

An effective education sector has the ability to transform a country through development of human resources and increased productivity. In the context of emerging countries particularly, levels of education and literacy of the population play an important role in development and overall transition to an advanced economy.

From letting teachers concentrate on building the minds of students instead of checking copies, to tailoring the learning process for each individual student, artificial intelligence is totally revolutionising the teaching-learning process in education.

A. Adapting to the Needs of the Student: For years, child psychologists and educators have been constantly talking about the fact that each child is special, with a unique combination of abilities and needs that affect learning. And all children deserve the opportunity to learn in a way that utilises their strengths and helps them overcome their weaknesses. But in a regular school system, with large classrooms, limited time and resources, adapting the teaching style for each student is not possible. This is where AI can make a huge difference, it can understand the strengths and learning gaps of each child and adjust the pace of learning to suit their needs.

B. Delivering Personalised Content to the Student: AI has the potential to change the present single uniform content delivery mechanism. It can personalize the learning experience of the child to suit his/her learning style. So, in an AI based system, a child who is a visual learner will get an animated video, an auditory learner will get an audio of a teacher explaining the concept and a child who loves to read, would get a book or an article for the same lesson. Similarly, the questions that the child solves moves from easy to difficult as the child's learning progresses.

C. Assistance to Teachers: AI systems can assist educators with secondary tasks such as grading activities, providing personalized response to students etc.

- Grading tests and exam papers are tedious and time-consuming, an AI-enabled system can auto-grade different types of questions such as essays, long-form and not just the multiple-choice questions. This would allow teachers to save a lot of time and use it to interact with students.
- Actionable Feedback to the Teachers: In a regular, pen and paper test, it is not possible for a teacher to analyse the child's learning gaps. The teacher can only say whether the child understood the tested concept or not. But the child may have existing learning gaps in related concepts which may be hampering his/her ability to learn a new concept. With AI, teachers can get precise actionable data on student performance and hence can provide students with the help they need to succeed.

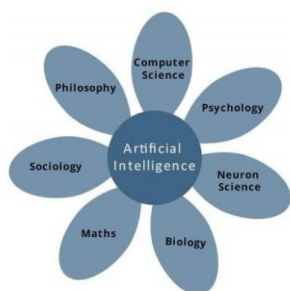
D. Accessible and Inclusive Education: Various tutoring programs, learning applications with skill-based curriculum are being developed across the globe. These AI-enabled systems will bring global classrooms at your fingertips. It will not only empower students but also teachers in upgrading themselves with current trends. Such systems could be a boon for rural education. Students living in the most remote parts of India would be able to learn the way it is learned in an urban setting.

E. Changing the Role of Teachers: One key aspect of education that will not change is the teacher. AI-based tools will never replace the teacher but their role will evolve. The teacher would become a facilitator of learning, assisting students, providing human interaction and more hands-on experience in the classrooms. Students will become owners of their own learning process and this will significantly improve learning outcomes and quality of education.

"The idea that you could talk to an [virtual] advisor that would understand different misconceptions and arbitrary linguistics around it, that'll certainly come in the next decade. And they'll be a very nice supplement and the beauty of this is it could be completely free." – Bill Gates

Focus areas for India to fully benefit from AI –

1. **Forward thinking:** India needs to first invest in Artificial Intelligence in such a manner that it gains substantial experience out of it. Currently AI is more of a buzzword.
 - AI is inter-disciplinary in nature. Therefore we need to setup inter disciplinary features in the development of AI and deploy academic collaboration to bring up large pool of people to get leverage out of it.
 - Need to promote, fund, and coordinate relevant interdisciplinary research projects (comprising philosophy, neuroscience, and computer science)
 - Incentives should be set for researchers and decision makers to deal with the consequences of AI research
 - Expert commissions should be formed, and research projects funded
 - Need for a proper roadmap – AI Policy which should be able to guide all future policies related to the field



2. Transparency over new measures:

- Advantages and disadvantages must be systematically analyzed and discussed at a political level.
- While AI has many positive applications, it is a dual-use technology, and AI researchers and engineers should be mindful of and proactive about the potential for its misuse
- Information on the risks associated with AI progress must be made accessible and understandable to a wide audience.
- Grantors should encourage research projects to document the relevance of their work to AI safety, as well as the precautions taken within the research itself

3. Automation and Job Scenario

A Gartner report predicts that AI will create 2 million net new jobs by 2025. Advances in virtual assistants and deep learning will foster adoption of artificial intelligence, according to the market research firm.

- **AI will create new tasks and demand new skills:** Investments in human capital will be at the heart of any long-term strategy for producing skills that are complemented, rather than substituted. There is a need to acquire skills that can capitalize on or complement AI. Skill development and **reskilling** is the key.
- **Discard the “factory model” of education:** The overall approach to education needs to shift from knowledge dissemination to skills training, with students having the option to pursue formal vocational training.

Summary of Potential Benefits of AI and Risks:

Sector	Potential Benefits	Potential Risks
Governance	<ul style="list-style-type: none"> • Process Optimization & Cost Saving • Decision Making & Problem Solving • Human Resources Management 	<ul style="list-style-type: none"> • Lack of Technical Competence • Inability to Synchronize Goals/Expectations • Dependence on Foreign Technology
Economy	<ul style="list-style-type: none"> • Next Generation of Economic Growth • Spurring Innovation • Value and Job Creation 	<ul style="list-style-type: none"> • Economic Competition & Espionage • Threats to Intellectual Property • Loss of Conventional Jobs
Automotive Industry	<ul style="list-style-type: none"> • Self-driving Cars • Enhanced fuel efficiency • Enhances Safety Features • Optimize Logistics & Supply Chain 	<ul style="list-style-type: none"> • Regulatory Challenges • Overdependence on Technology • Software Error, Defect or Failure • Susceptible to Hacking/Interference
Defence & Security	<ul style="list-style-type: none"> • Decision Making (Tactical & Strategic) • Trainings and War-gaming • Logistics, Fleet Management • Periodic Maintenance • Intelligence Analysis • Face Recognition & Crime Prevention 	<ul style="list-style-type: none"> • Dependence on Foreign Technology • Human Safety & Security • Software Error, Defect or Failure • Potential Weapons Arms Race
Foreign Policy	<ul style="list-style-type: none"> • Decision Making • Scenario Analysis • Analysis of Historical Data/Events • Negotiations • Information Analysis • Public Diplomacy 	<ul style="list-style-type: none"> • Lack of Cognitive Data for Deep Learning • Multilateral Rules of the Road • Technology Acceptance in Decision Making • Lack of Data from Other Countries • Dependence on Foreign Technology • Potential Weapons Arms Race
Healthcare	<ul style="list-style-type: none"> • Drug Discovery and Safety • Diagnosis and Lab 	<ul style="list-style-type: none"> • Training Doctors and Paramedical Staff • Generating Awareness

	Results Analysis <ul style="list-style-type: none"> • Preventive Care • Insurance Risk Assessment 	<ul style="list-style-type: none"> • Acceptance of AI in Medical Practices • Technology Affordability
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Regulating Artificial Intelligence

One of the most powerful men in IT, Sundar Pichai, has backed regulations for artificial intelligence. While Pichai isn't the first big tech executive to say so publicly, his voice matters, given that Google is arguably the world's largest AI Company. Tesla and SpaceX chief Elon Musk has been vocal about the need for regulating AI several times in the past. Musk even said that "by the time we are reactive in AI regulation, it's too late". Microsoft president Brad Smith is another prominent person in tech who has called for regulation of AI.

Pichai, in an editorial, advocated for AI to be regulated keeping in mind both the harm and societal benefits that the technology can be used for. He also said that governments must be aligned on regulations around AI for "making global standards work".

While India has been vocal about the use of AI in various sectors, it is far from regulating it. A 2018 NITI Aayog paper proposed five areas where AI can be useful. In that paper, the think tank also noted the lack of regulation around AI as a major weakness for India.

Despite all the established entry modes into the global market, AI is yet to have a guidepost, be regulated or even be legally understood.

Let's take the example of Sophia: awarded citizenship under the laws governing citizens of Saudi Arabia, will she be permitted to drive from June 2018? Will she be allowed to purchase property? If she commits a crime, equal to the statement she said apparently by error i.e., she wanted to destroy humankind, what punishment would be awarded?

AI is wholly based on data generated and gathered from various sources. Hence, a biased data set could evidently lead to a biased decision by the system or an incorrect response by a chatbot.

The point being, AI is growing multi-fold and we still do not know all the advantages or pitfalls associated with it which is why it is of utmost importance to have a two-layered protection model: one, technological regulators; and two, laws to control AI actions as well as for accountability of errors.

Accountability for Errors: Let's take the example of AI in the form of personalised chatbots. Chatbots are chat-based interfaces which pop up on websites with which customers can interact. These chatbots can either follow a scripted text or through machine learning (ML) and increased interaction deviate from the standard questions to provide a more human-like interaction. In the course of communicating with the chatbot, if a person were to divulge sensitive personal information for any reason whatsoever, what happens to this data?

So, in the case of an ML chatbot which does not work as per a scripted text and has collected sensitive personal information, who is responsible if Rule 5(3) is breached? The most obvious answer would be the business unit/company because the rules in the 2011 Rules state that “The body corporate or any person who on behalf of the body corporate...” collects information. However, could the business possibly avoid liability by claiming that it was not aware that the chatbot, due to its AI ability of machine learning, had collected sensitive and personal information?

We do not have any clear provisions for advanced chatbots which do not work on a scripted text. With the lack of a clear provision in the law, accountability may take a hit. Additionally, what happens if an AI robot is given citizenship in India? Who is responsible for their actions? Or in case of autonomous car accidents, who is responsible for damage to property or harm caused or death of a person?

Reflects existing social biases and prejudice: Much recent research shows that applications based on machine-learning reflect existing social biases and prejudice. Such bias can occur if the data-set the algorithm is trained on is unrepresentative of the reality it seeks to represent. Bias can also occur if the data set itself reflects existing discriminatory or exclusionary practices. The impact of such data bias can be seriously damaging in India, particularly at a time of growing social fragmentation. It can contribute to the entrenchment of social bias and discriminatory practices, while rendering both invisible and pervasive the processes through which discrimination occurs.

Even if estimates of AI contribution to GDP are correct, the adoption of these technologies is likely to be in niches within the organised sector. These industries are likely to be capital rather than labor intensive, and thus unlikely to contribute to large scale job creation.

Will replace low to medium skilled jobs: At the same time, AI applications can most readily replace low to medium skilled jobs within the organised sector. This is already being witnessed in the BPO sector – where basic call and chat tasks are now automated. Re-skilling will be important, but it is unlikely that those who lose their jobs will also be those who are being re-skilled – the long arch of technological change and societal adaptation is longer than that of people’s lives.

Key Public Policy Challenges of AI

A. Ethics – There are two dimensions of ethics in AI:

- **Privacy and Data Protection:** It is the top most concern while using AI systems.
- **Human and Environmental Values** – Any AI system has to conform to human value system and the policymakers need to ask: Has the AI system been sensitized to human values such as kindness, equity, dignity etc.? An important aspect which needs to be built into AI systems is the overall cost of their decisions on the society.

B. Transparency and Audit – The technology providers must explain the decision-making process to the user so that the AI system doesn’t remain a black box. These AI systems must provide an audit trail of decisions made not only to meet the legal needs but also for us to learn and make improvements over past decisions.

C. Digital Divide and Data Deficit – Since the entire AI revolution has data at its foundation, there is a real danger of societies being left behind. Countries and governments having good quality granular data are likely to derive maximum benefit.

D. Fairness and Equity – AI can disrupt social order which could damage the social fabric exposing people lower in bargaining hierarchy with a real threat of exploitation and unfair treatment. An AI system designed with equity as a priority would ensure that no one gets left behind in this world. Also, the AI system must exhibit fairness. They must not exhibit any gender or racial bias and they must be designed to stay away from ‘social profiling’ (especially in law enforcement, fraud detection and crime prevention areas).

E. Accountability and Legal Issues – Once machines are equipped with AI and take autonomous decisions, the question of accountability becomes very hard to answer, more so when the algorithms are unknown to the designer.

F. Misuse Protection – This possibly is the toughest of all. How do we insulate every new technology to prevent it from being twisted for achieving destructive goals?

Success Stories

1. Integrating AI capabilities to this device using Microsoft’s retinal imaging APIs enables operators of 3Nethra device to get AI-powered insights even when they are working at eye checkup camps in remote areas with nil or intermittent connectivity to the cloud.

2. The Tamil Nadu e-Governance Agency has partnered with Anna University to launch a Tamil smart assistant called “Anil”.

- The agency has recently launched an AI-based agricultural pest and disease identification system and made it available to over half a million farmer families through a mobile app.
- The Tamil Nadu Govt. is implementing an innovative use of AI through face recognition for recording attendance. The system is saving more than 45 minutes per day and is freeing up extra time for core educational activities in schools.

The Way Forward

- With all the positive impact AI has to offer, it is of utmost importance for the Government of India to establish sound data policies to ensure that the benefits can be materialized by society. Achieving meaningful results will depend on India’s ability to create an environment that fosters the development of AI and builds trust and confidence in the technology. AI systems are only as strong as the quantity and quality of the data that is available to them for training; if data cannot be accessed and shared, then AI will suffer. This means that the government has a critical role to play in the future of India’s AI landscape.
- Our laws need to be amended or new laws for AI technologies and processes will need to be adopted to fill up existing lacunae in the growing AI space. There is a need to form the basic guidelines which should be met on a national level for any AI activity – indigenous, foreign or even modifications to an open source AI. The

guidelines would serve as the foundation for any amendments in the laws or brand new AI laws.

- In addition to developing AI applications and creating a skilled workforce the government needs to prioritize research that examines the complex social, ethical and governance challenges associated with the spread of AI-driven technologies. Blind technological optimism might entrench rather than alleviate the grand Indian challenge of inequity and growth.
- In fact the element of end-to-end 'human involvement' has been insisted upon by most AI advanced countries such as Canada, in order to ensure accountability and security of AI systems.

Think:

1. Is the Internet and technology really a game changer within the education sector?
2. Analyse the need and challenges in regulating Artificial Intelligence in India.
3. "With great power comes great responsibility. Technology is in itself just a tool; what matters is how we use it." Discuss in the context of AI.

Innovation in Higher Educational Institutions

The economic success of any nation largely depends on the quality of education provided by its educational institutions. This is even more pertinent for India, where more than 50 percent of its 1.36 billion citizens are under the age of 25 and 65 percent are under 35 years of age. Consequently, this makes India's higher education system the third largest in the world (in terms of number of students). The problem is that we as a nation are not effectively able to utilise such a large pool of prospective employees and assimilate them into the workforce. Of the educated citizens of India, a mere 45 percent are employable. While this statistic represents a big jump from the 33 percent employability five years ago, the situation still remains concerning.

These abysmal numbers do not come across as a surprise because the disparity can be seen clearly when we look at the demand and supply gap in the higher education system of India. With the largest population in the world between the age bracket of 5 to 25, India requires hundred- thousands of universities, schools and colleges to reach out to the dynamic talent pool it has. The next gap comes to fore when we see that quality education, especially at the higher level is limited only to a few institutes such as IITs, IIMs and some others. The conversion rate for IIMs itself is very low as only 1 out of 150 applicants manage to get admission there. This fact is partially due to the smaller number of seats available for candidates in the premier institutes of our nation.

But the situation is not that bleak all around, for one, around 75 percent of global STEM graduates will be concentrated in BRICS nations by 2030. Another development to be optimistic about in recent years is the rise of online education in India, with its market value standing at \$247 Million, as of 2016 with 1.57 Million users. The more traditional and rigid teaching models are now being replaced by adaptive and personalised pedagogies, examples of which include mobile based learning, open educational resources, and utilisation of AR and VR for learning, and mobile-based learning. There is naturally an

enormous dichotomy between what is needed and what we deliver which only contributes to rising tide of unemployable educated youths.

1. Education must move from being teacher-centric to learner-centric and the entire concept of student has to change to a learner. Teacher is no more the sage on the stage but a guide on the side. So, the job of the 21st century teacher is to be a mentor, motivator, facilitator, and first stimulus to grow interest in any theme or subject among the learners. Students, on their part, have to move to the next paradigm of learners for whom classroom is just one source of learning, sometimes not even the major one, others being internet, personal and peer experiences, labs and society at large. They research, learn, explore and internalize by practising for acquiring a productive life skill.

2. A major educational innovation comes from the perspective of convergence. So we get a converging pedagogy which combines the experiential learning with traditional brick and mortar and the modern IT enabled click and portal one. Even evaluation of education cannot be based on earlier year-end long written exams. We are moving into a modular education, delivered semester-wise (in some cases even trimesters) with a blended evaluation incorporating simulated and live projects, continuous internal assessments of quiz and debates, field-work reports, case-studies, online tests and class presentations.

3. Flexibility in education is the innovative vision of our times: While BA BCom BSc all over India are three years long degrees, BITS Pilani has evolved an industry-centric BTech for working professionals where the education is delivered at the work-places along with their work. Many universities are creating integrated UG-PG course of five years duration. Nomenclatures are being questioned as in Journalism & Mass Communication as journalism is a component of communication, and communication can be niche, mass, group etc.

4. Inclusivity is the new innovation of the day. Instead of all girls, or all minorities, or all Hindus, or a linguistic group, the order of the day is gradually to opt for an inclusive all communities and genders campus-life which helps in making more well-rounded citizens with a global mind-set and higher tolerance. Scholarships, based on both merits and means, encouraging women and even creating safe environs for the LGBTQ communities on campuses are crucial inclusive factors.

5. National and global mentors and learners. The more varied will be the composition of mentoring and learning folks, more tolerant, mutually respectful and global will be the mindset of all involved. Hence, an innovation ahead should be compulsory visit by learners to other parts of India and, budget allowing, going abroad for education tour, a project, an internship, workshops or a semester.

6. The entire degree-centric higher education needs to give place to skills and values-centric education. What are we mentoring and learning for? To have a value-based approach to life, be responsible global citizens, and be productive for the economy and earn a decent livelihood. And none of these depends on a degree. It is just the legal power of the University, received through a decree of the government of the day, that degree looks big. For a measure of qualification, degrees are welcome. But the focus has to be on skills and values. Amazon, Google, Apple and Facebook are among some major global companies who have already declared that they do not need degrees, will give no premium to degrees, but only hire based on skills and attitudes.

7. The new era needs certain non-technical skills or orientation as well: business orientation, entrepreneurial skills and leadership skills. End use sensitivity of every education and skill-learning is significant. Learning is for a society in general, and a market segment in particular, for a job more narrowly, and for some clients or users of the learner's skills finally. Sensitivity to these is a necessary part of higher education today.

8. There is a new gamut of abilities for the times ahead which are necessary to be intertwined in our higher education courses.

- Crowd-sourcing of ideas, projects and funds is an important skill in times of shared gig economy increasingly dependent on collaboration and not competition, freelance talent and not bonded ones.
- Next is the understanding of block-chains of projects and businesses which is disrupting traditional business models. Ability to participate productively in a shared economy and create one's own space itself is a major skill.
- Artificial Intelligence will take away all skills of mass production, repetition, low IQ tasks and wherever there is a precedence. That reduces human scope of work. Hence, skills to create, innovate, problem solve, crisis management, design thinking, critically think, teamwork and create prototypes or templates for AI are the skills that will ultimately remain with humans.

Examples: Catalysing Student Innovation and Entrepreneurship

- The **Atal Innovation Mission** under the aegis of **NITI Aayog** is promoting the formation of Atal Tinkering Lab (ATL) in schools to promote innovation.
- At IIT Madras (IITM), an **after-class activity called the Centre for Innovation (CFI)** transformed the students from passive listeners to active learners. CFI was set up to provide an outlet for the students to try-out their passion without the burden of grades or exams. The centre was set up with the motto ***"walk in with an idea and walk out with a product"***.

India today stands at the crossroads where it can either become the growth engine of the world, leveraging its demographic dividend, or lose out on the opportunity. The level of excellence in higher education will be a key factor in determining the role that India will play, globally, in the immediate future.

Education and Technology for the Blind

With holistic schemes like 'Samagra Shiksha' providing education to children with special needs, India has witnessed a sea change in inclusive education. However, the country has to go a long way to achieve parity between the visually impaired and sighted children in the area of quality education.

- Miss Annie Sharp, an Anglican was instrumental in launching a facility in Amritsar for the blind in the year 1887.

A Chronology of Educational Services for Blind:

- 1887 – A facility for the blind was launched in Amritsar
- 1944 – Lt. Col. Sir Clutha Mackenzie played a major role in writing the GoI report on blindness.
- 1947 – A unit for visually impaired was established in the Ministry of Education
- 1951 – India adopted the uniform Braille codes for various Indian languages
- 1952 – First ever Braille printing plant of India was established in Dehradun
- 1954 – Braille appliances manufacturing unit was set up
- 1959 – Govt. set up its first school for blind children in Dehradun
- 1960 – Four regional centers for teachers of blind were set up
- 1974 – India launched the Integrated Education for Disabled Children (IEDC)
- 1981 – Observance of International Year Of Disabled Person
- 1983-92 – The UN Decade for the Disabled
- 2016 – Rights of Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act enacted in 1995 to give effect to the decisions taken in the Beijing meeting in 1992.
 - ✓ The act provided for education in special as well as normal school and informal settings, research and resources required for the disabled among other facilities.
 - ✓ Recognising the prevailing environment, this law allowed free and universal education for the disabled up to the age of 18 years



Global Synergy in Higher Education

Good higher education is critical to build and maintain a skilled workforce so that India's dream of becoming a \$5 Tn economy can materialise. However, we face the enormous challenge of generating 10 million jobs every year until 2030 to keep up with the growth of our working-age population. Indian higher education currently lacks the capacity to achieve the optimum enrolment ratio needed for this.

While metropolitan cities enjoy strong educational infrastructure, this is not the case for Tier-II and Tier-III cities. The high cut-offs in many premier institutions in Tier-I cities present another roadblock for countless students from outside who seek admission in these colleges.

Further, access to greater qualifications does not guarantee employment prospects. A 2017 study conducted by the All India Council for Technical Education (AICTE) illustrates this well. It found that over 60 per cent of the 8,00,000 students graduating from engineering colleges across the country every year remain unemployed.

These factors have spurred thousands of Indian students every year to pursue their higher education abroad. Between 1998 and 2018, the number of Indian students seeking foreign degrees had grown almost five times. Today, India is the second-largest source of international students across the world.

The challenges –

A. Quantity: We have distortions both in terms of excess supply and short supply.

- Management and engineering are examples of excess supply, where the shake-out due to low registrations is beginning to happen. It may have some positive impact on quality.
- Medical and niche areas of skilling are where we have short supply. The fact that many of our students go to other countries (China, Russia, Malaysia) for relatively low-cost medical education is testimony to this. The regulator in this domain is partly responsible for this.
- In many areas of skilling (driving, construction, plumbing), the supply of quality institutions has not picked up partly because the demand side is not sensitive to this, and licensing requirements are lax. More importantly, the demand side being largely in the unorganised and semi-organised sectors, it is important to see how the supply side can reach out to the demand side for effective skilling.

B. Quality: There is not enough focus on creativity and research-orientation, and critical and liberal thinking.

- Higher educational institutions need to refocus themselves as research and teaching bodies, rather than just money-making teaching shops.
- Degrees matter more than skills, leading to high number of graduates with low employability
- Education policy focused on rote learning, and lack of availability of quality vocational training
- The government has to be liberal on research funding, albeit through a competitive route. A role model is the National Science Foundation (NSF) funding in the US.
- Faculty development programmes, especially in a continuous learning mode, need to be increased.
- Non-teaching time of faculty, directed towards research and personal development, needs to be protected to the extent of at least 40% of their time. This will create a **platform to nurture quality**.

C. Additionally,

- Inadequate academic-industry engagement, still limited to select few institutions
- **Quality education with global exposure**, which is the cornerstone of excellence is limited and expensive
- Inadequate research and scholarly excellence

BUDGET 2020-21

- Announced that the education sector would be opened up to Foreign Direct Investment
- External commercial borrowings and FDI to be leveraged to improve the education system

Possible Expectations:

- It possibly can address quality teaching by attracting (and incentivising) good teachers.
- The better bet for research focus is to improve industry-academia interaction, with industry leveraging research supply of academic institutions. A successful role model is the Research Park at IIT Madras.
- FDI, in the form of industries from other countries investing in such research parks, would be a useful step.
- Online degrees again primarily address the quantity issue rather than quality. While making learning and degree-seeking more accessible, a possible positive effect on quality could be if online degrees by top-ranked institutions are a better learning opportunity than in-class learning offered at lower-ranked institutions.

Is there a need for Global cooperation?

Yes, to maximise the potential of its demographic dividend. India does not have the capacity to meet this demand on its own.

- NITI Aayog and several other organizations have developed policy documents on higher education that have stressed on the need of international assistance in higher education.
- Draft National Education Policy 2019 proposes inviting the top 200 global universities to establish foreign branch campus in India.
- MHRD has developed a five-year action plan named EQUIP (Education Quality Upgradation and Inclusion Programme) to bring transformation in the higher education system in the upcoming 5 years.
- NITI Aayog has more recently favoured the development of Exclusive Education Zones (EEZs) akin to SEZs in a few select cities in Bengaluru, Hyderabad, Ahmedabad, Pune, Chandigarh and parts of Sikkim, to boost growth in the flow of foreign students.
- Indian government initiatives like the Global Initiative of Academic Networks (GIAN), which provides funding for teaching at selected Indian higher education institutions and Scheme for Promotion of Academic and Research Collaboration (SPARC) are opportunities to be explored.

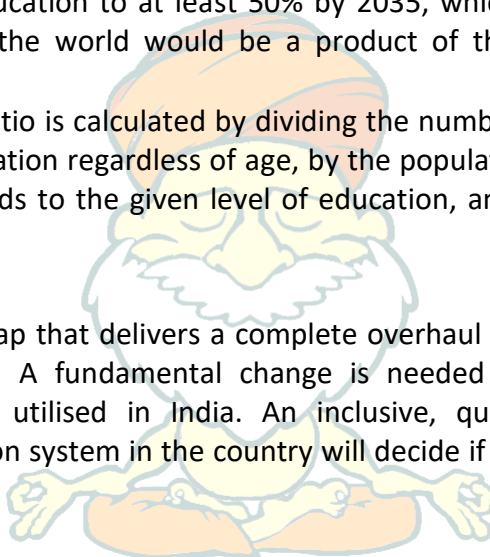
Gross enrolment ratio

DROPOUT RATE IN HIGHER EDUCATION (%)

Year	IIT	IIM	Others
2015-16	2.25	1.04	7.49
2016-17	1.60	1.06	8.56
2017-18	1.71	1.03	6.76
2018-19	1.46	0.50	5.36
2019-20	0.68	0.78	2.82

- At the higher education level, according to AISHE 2018-19, the GER is 26.29% for boys and 26.36% for girls. At school and senior secondary levels, too, GER is again a little higher for girls than for boys.
- India's draft National Education Policy aims at increasing the gross enrolment ratio (GER) in higher education to at least 50% by 2035, which would mean that one in four graduates in the world would be a product of the Indian higher education system.
- Gross enrolment ratio is calculated by dividing the number of students enrolled in a given level of education regardless of age, by the population of the age group which officially corresponds to the given level of education, and multiplying the result by 100.

What we need is a roadmap that delivers a complete overhaul of India's education system over the next five years. A fundamental change is needed for the way education is perceived, imparted and utilised in India. An inclusive, quality assured and globally acceptable higher education system in the country will decide if India's large population is a liability or an asset.



Skill Development

What is Skill Development?

Skill development is the process of

- a. Identifying skill gaps
- b. Developing & honing those skills

Skill training is targeted training provided to candidates to help them acquire knowledge and abilities necessary for them to achieve gainful employment.

The nodal Ministry responsible for skill training and development is the **Ministry of Skill Development and Entrepreneurship (MSDE)**. The key elements of this Ministry are

1. National Skill Development Agency (NSDA)
2. National Skill Development Corporation (NSDC): Setup as Public Private Partnership Company with the primary mandate of catalyzing the skill landscape in India
3. National Skill Development Fund (NSDF)
4. 33 sector skill councils (SSCs) as well as 187 training partners registered with NSDC

Challenges

Over the last 10 years, the Indian government has undertaken significant efforts in improving both the scale and quality of skilling, like setting up the National Skills Development Corporation (NSDC) in 2009, launching the Skill India mission in 2015, and the flagship skilling initiative, the Pradhan Mantri Kaushal Vikas Yojana (PMVKY) in 2016. This, in turn, is expected to drive economic gains and social mobility for individuals as well as trigger a productivity dividend for enterprises. Despite the progress made so far, today, learners face a multitude of challenges on their skilling journey.

33% of India's skilled youth jobless: Official survey

- Only 1.8% of the population reported receiving formal vocational/technical training in 2017-18. 5.6% reported receiving informal vocational training (such as hereditary, self-learning, and on the job training). This means 93% of the population did not receive any vocational/technical training from either formal or informal sources. The youth (15-29 years) comprised more than half of the people who received formal vocational/technical training.
- About 42% of the youth (15-29 years) who received formal technical training were not part of the labour force at all (i.e., they were not working or seeking employment opportunities, they reported). Among youth who did not receive such training, 62.3% were out of the labour force. Across age groups, substantial shares of the women who received such training were out of the labour force.
- The unemployment rate among freshly trained youth, who completed training during the previous year, was even higher at 40%. With these high unemployment rates, it is likely that many young men and women have moved out of the labour force altogether after a fruitless job search.

Two ecosystem barriers contribute directly to this:

A. Informational asymmetries

- Fundamental lack of awareness around why skills matter at the individual level
- A paucity of timely and reliable data on the supply of and demand for jobs, which makes it difficult for those seeking employment to identify what opportunities they should pursue
- Limited access to impartial and credible sources of information on high-quality service providers and high-potential opportunities, which means that jobseekers and learners end up relying on personal networks or proximate training providers

As a result, they end up training in skills that are not responsive to the local and changing market needs.

B. Limited quality assurance

- Currently, there are three primary overseeing bodies that manage the quality assurance process. The National Council for Vocational Training (NCVT) manages long-term skilling programmes while the National Skills Development Agency (NSDA) and the NSDC regulate short-term programmes.
- There is also an imbalance at various levels of the process that need correction, for example, incentives for different service providers are misaligned leading to situations where outcome-based disbursement models favour assessment agencies over training providers.

How do we unlock the potential of the skills ecosystem?

These frictions must be smoothened through well thought of policies, technology-led change, as well as through market-enabling governance.

A. Policy factors that need to be taken care of: A new policy design needs to first focus on transforming the current push system into a pull-based one, which would include

- **Empowering the trainee**, so that she makes an informed choice about the programme she wishes to pursue, through counselling support and making payment through skill vouchers;
- **Conducting a rigorous** quality-grading of skill training institutions to weed out undesirable ones to support the empowered trainee in making this choice;
- **Strengthening the assessment** and certification system to make it robust and hence credible;
- **Finding ways and means** to incentivise industry through a light-touch approach to participate in the skill development agenda especially through apprenticeships;
- **Decentralising the skill** development initiative by building capacity at the district and state level for planning and monitoring the implementation of schemes; and
- **Providing enabling** support for embedding skills in education and lifelong learning. This calls for initiatives focused on vocationalisation of school and college curricula. There is also a need to operationalise NSQF as a framework for lifelong learning and developing pathways between the skill development system and the current academic system.

To address the challenge of low pace of job creation, the policy has to focus on:

- **Skilling** and providing enabling support for entrepreneurship; and

- **Recognition of Prior Learning (RPL)** of the skilled but uncertified persons for transitioning them from the unorganised to the organised sector
- **Third, to address the overseas opportunity** for skilled Indians, the policy needs to build on its current initiatives for placements in Japan with similar government-to-government (G2G) approaches to other overseas markets like the EU. For traditional overseas markets like GCC countries, creating capacities to assess competencies of the emigrants is imperative.
- **Finally, the policy** should focus on skilling in emerging technologies to enable India to transition into a global knowledge economy and support mission mode initiatives like Make in India, Smart Cities, doubling farmers' incomes, etc.

B. Technology

Moving to a technology-led transformation will help reach scale, promote inter-operability and create digital public goods for all to use, that is, the internet equivalent for skills. Automated and scalable forms of interactions can help improve trust and credibility in the ecosystem and enable better decision-making by learners, service providers and employers.

Two leading initiatives in this direction are

- (i) Creating and adopting digital certificates that allow consent-based sharing of information in a machine-readable format, to ensure better security and authenticity
- (ii) Open APIs that can enable stakeholders in the ecosystem to tap into large, centralised sets of information (e.g. public registries of trainers, students etc.) and build market solutions (e.g. ratings for training centres).

C. Consolidated and market-enabling governance can also help create the right incentives for service providers to cater to the needs of learners and employers effectively.

Creation of an overarching skilling regulator, the National Council for Vocational Education and Training (NCVET) by merging NCVT, NSDA and regulatory functions of NSDC:

- Will develop minimalistic and user-friendly guidelines to recognise and regulate two of the most important stakeholders in the skilling ecosystem — the awarding bodies, who accredit training institutions, and, the assessment agencies, who assess learner performance.
- NCVET will be a forward-looking regulator and will support disruptive innovation in the ecosystem like models that reduce the gap in market-based data between learners and service providers.
- NCVET will be a presence-less and paper-less regulator: It will take decisions that are rooted in evidence and real-time data driven, and, adopt a spirit of disclosure and transparency in its interactions. Most significantly, NCVET will adopt a learner-centric lens to its decision making.

As per NITI Ayog's report, Strategy For New India @75, skill development plans and strategies should be developed by geography and sector by mapping the availability of infrastructure and on the basis of assessing skill requirements.

To push the skilling agenda forward, it is important for the government to adopt the role of an ecosystem facilitator. This can foster informed decision-making by learners and employers, increase employer trust, and, enable upward and horizontal mobility of skilled

workers. Technology and governance must work closely together to drive this transformative change.

Women Entrepreneurs in India: Opportunities and Challenges

The Indian economy has grown steadily over the last decade, and there has been a parallel surge in the number of start-ups and new businesses in the country. A majority of these have been founded by men. While many Indian women have ambitions towards entrepreneurship, it is often more difficult for them to succeed. In fact, India has been found to be in a group of countries where women business owners (as well as women leaders and professionals) struggle with less favourable conditions, pronounced cultural biases, and a lack of business resources such as finances, capital, training, and development.

A society in which women cannot realise their full potential loses out on the significant potential for innovation, economic growth, and job creation. For instance,

- A recent study showed that in India, measures to close the gender gap could lead to a 6.8-percent gain in GDP
- Another study estimated that advancing women's equality in India could boost its GDP by \$0.7 trillion in 2025 or 16 percent as compared to the 'business as usual' scenario. Moreover, entrepreneurship remains critical to harness the economic potential of women and thus, achieve the sustainable development goals (SDGs) by 2030.
- The low rates of women entrepreneurship are reflected in a dismal score in the Index of Women Entrepreneurs, where India is ranked 52nd out of the 57 surveyed countries. The fact that few women own companies is part of a larger phenomenon of weak engagement of women in business.
- This further relates to a low female labor force participation rate as well as women having fewer opportunities to become business leaders, professionals and technical workers. Indeed, despite high economic growth rates as well as an increase in the proportion of working-age women in the population, the participation in the work force has decreased from 35 percent in 2005 to just 26 percent in 2018.
- According to 6th economic census, 13.76 per cent of MSME's are women owned i.e. approximately 8.05 million out of 58.5 million businesses.
- In India, there are also urban/rural differences in rates of women's entrepreneurship, with more women's enterprises based in rural areas (22.24 per cent of all rural enterprises), compared to urban areas (18.42 per cent of all urban enterprises) according to Ministry of MSME Annual Report.
- There is a variation in the distribution of women-owned enterprises across India at state level, suggesting diversity in the enabling environment for women entrepreneurship. The largest share in the number of establishments under women entrepreneurs are clustered in the southern states of India.

What are the challenges women face?

A. Unconscious gender bias: *Unconscious gender bias is defined as “unintentional and automatic mental associations based on gender, stemming from traditions, norms, values, culture and/or experience,” and has been found to be a key factor impeding the progress of women entrepreneurs. Automatic associations enable quick assessment of an individual and often feed into decision-making that is unfavourable towards women. Individuals, regardless of gender, hold unconscious biases.*

B. Access to finance: *Stereotypes appear to manifest in behaviour as fewer women actively approach investors and are more reluctant to divest stakes. However, if women do approach investors, they are perceived differently than men, and investors have been found to prefer pitches presented by men as compared to those by women, despite identical content. Further difficulties with procuring funding occur due to the fact that Indian women rarely own property, which can be used as collateral for loans. Moreover, about 79 percent of women-owned ventures are self-financed, but families are often hesitant to support their daughters’ entrepreneurial ventures financially.*

C. Family support: *The other side of the “business is a man’s domain” coin is that predominant social norms expect women to first and foremost look after their home. In fact, many Indian women often do assume greater responsibility at home and spend, on average, five times as much time than men on housework, household care, and other unpaid activities. As juggling between both home and company can be challenging, family support is considered a core success factor for Indian female entrepreneurs.*

D. Child care: *While some perceive entrepreneurial careers as difficult to reconcile with duties at home, they might be a good opportunity for women, allowing them to work with more flexible hours and space. However, when women entrepreneurs become mothers, they often encounter further difficulties holding them back. On the one hand, they are not entitled to maternity benefits. On the other, when women start working again, they need help and some women entrepreneurs live with or close to the grandparents, who can look after the kids. However, those who are less fortunate, struggle with a lack of options for child-care. Some women consider hiring nannies, but again, negative perceptions come into play, and the society view these mothers as “selfish” and are made to feel guilty by their peers.*

Harnessing the full potential of women entrepreneurs can promote innovation, economic growth, and job creation.

- Provide equal access to education and encourage women to use their acquired skills by joining the workforce. Policies aimed at including more women in senior and leadership positions are needed and will help women gain experience and knowledge, which in turn will enable them to start their own businesses.
- Awareness for unconscious biases and how they disadvantage women entrepreneurs needs to be raised. However, as changes in mind-sets take time, women entrepreneurs need to deal with negative attitudes, by being conscious about the bias themselves, while finding ways to minimise it. Sharing their success stories in social and traditional media provides inspiration and proof that business can be a woman’s world, too, and therefore strengthen the confidence of younger female

entrepreneurs.

- Women entrepreneurs in India need better access to finance and networks. Organisations such as NITI Aayog's Women Entrepreneurship Platform, Catalyst for Women Entrepreneurship, and the accelerator for women in tech initiated by Zone Start-up's India, provide dedicated support for women entrepreneurs. They connect them with relevant people in their industry and foster networking among the women entrepreneurs themselves, so they can learn from each other's experiences. Moreover, they assist in fundraising by teaching how to pitch and connecting them with potential investors. Studies indicate that policies aimed at reducing collateral constraints can improve equal access to finance.
- More inclusive, non-discriminatory, and safe work environments are needed to help retain qualified women, especially in the tech sector. Measures to improve the safety of public spaces are necessary, so women can commute between their homes and offices without the mental load of having to always worry about their security.
- Women entrepreneurs need more support from their families and social circles to pursue their entrepreneurial ambitions. Household and care duties should not be understood as women's sole responsibility. Furthermore, granting maternity benefits to women entrepreneurs, improving childcare, and cultivating social acceptance would help them combine their entrepreneurial pursuits and family responsibilities.

Empowering women is a pre-requisite for creating a good nation. When Women are empowered, a society with stability is assured. Empowerment of women is essential as their thoughts and value systems leads to the development of good family, good society and ultimately a good nation.

Indicators of Job Market

Labour Force Participation Rate (LFPR)

LFPR is one of the key indicators, which explains the condition of labour market and the extent of population that is economically active. It is defined as the percentage of persons in the labour force among the persons in the population. The LFPR for persons of age 15-29 years was 38.2% in 2017-18.

Unemployment Rate

It is defined as the percentage of unemployed person in the labour force and it was 6.1% in 2017-18. Despite increasing pace of skill development, unemployment rate among youth has not declined. Supply of appropriately skilled manpower is a necessary condition for reducing unemployment, meeting aspirations of youth, increasing productivity and remuneration. On Skill Development front, the mismatch between demand and supply of skilled labour is one of the causes for increasing Unemployment Rates among youth.

Skill Development and Healthcare

Key Statistics:

- In a report released by NSDC in the year 2015, the health workforce requirements for India were estimated to be around 7.4 million by the year 2022.
- More recently, the National Health Profile 2018 of India reported availability of 5.8 million health workers as on March 31, 2017.
- This meant a combined density of doctors, nurses, midwives in India is around 30/10,000 people, which is far below the threshold of 44/10,000 required to achieve Sustainable Development
- Goal-3(SDG3), as determined in the 2016 WHO Global strategy for Human Resource for Health: Workforce 2030.
- In early 2017, the Government of India committed to Universal Health coverage (UHC) through the new National Health Policy (NHP). The NHP 2017 has recognized the challenges of shortage and inequitable distribution of health workforce, and proposed increasing the availability and augmentation of skilled health human resource as one of the key strategies to advance UHC in the country.
- NITI Aayog's 2018-2022 Strategic Plan for New India@75 has aimed at generation of 1.5 million jobs in the public health sector by 2022-23.

Setting up of Healthcare Sector Skill Council (HSSC)

Skill Development in various forms (skilling, re-skilling and up-skilling) is key for any sector, and more so for service predominant sectors such as health. Therefore, the **Healthcare Sector Skill Council (HSSC)**, has been set up as not-for-profit, non-statutory certifying organization under the Ministry of Skill development and Entrepreneurship.

India has intensified its efforts to increase access to health services through the Ayushman Bharat Programmes with two components: Health and Wellness Centres (HWCs) and Pradhan Mantri Jan Arogya yojana (PM-JAY). In the roll out of HWCs, new Mid-level Health Providers (MLHP) & community Health Officers (CHOs) would be required. Thus, 'skill' becomes the key to the success of the programme.

The need of the hour

There is a need for increased investment in other categories of health workers such as allied health professionals, lab technicians, X-ray technicians, phlebotomists, etc. There is a need for re-designing the training programmes to match the skills required to implement public health activities as well as create job opportunities for public health professionals through cadre formation.

This will help enable access to healthcare for marginalised sections of the community, which is central to the process, will also improve the formal employment particularly for women and youth.

Economics behind Skill Development in Healthcare

It has been estimated that for **every dollar (or Rupee) invested on health, it gives 9 to 10 times economic return.**

India's public health expenditure was 1.2 per cent of the GDP in 2016-17. Therefore, the commitment of increasing government investment for health to 2.5 per cent of the GDP by the year 2025 (NHP 2017), can contribute to a better economic growth.

The **United Nations High-Level Commission on Health Employment and Economic Growth (ComHEEG)** highlighted that investment in the health workforce can have a significant paybacks across multiple Sustainable Development Goals, including

- SDG1 (poverty elimination),
- SDG3 (good health and well-being),
- SDG4 (quality education),
- SDG5 (gender equality)
- SDG8 (decent work and economic growth)

The return on the investment on health sector skill development is clearly high and desirable. Considering the existing shortage of health workforce and need for skilling, re skilling and up skilling, urgent mechanisms need to be established by increasing funding to improve availability of skilled health workforce in India.

Prelims Oriented News

A. Satellite Instructional Television Experiment (SITE)

- The largest sociological experiment in the world - this satellite communications experiment was performed for one year during 1975-76 by ISRO.
- During SITE, TV programmes on subjects such as health, hygiene, family planning and agriculture were beamed through satellite (stationed in 36,000 km high geostationary orbit).
- SITE experience enabled ISRO to evolve INSAT system for rapid expansion of country's telecommunication, TV broadcasting and weather monitoring infrastructure.

B. EDUSAT Programme: A dedicated satellite for the educational field, was launched by GSLV and utilized for enhancing the outreach as well as the quality of the formal as well as informal education sectors.

C. DHRUV

- DHRUV, or the Pradhan Mantri Innovative Learning Programme, was started to identify and encourage talented children to enrich their skills and knowledge.
- Gifted children will be mentored and nurtured by renowned experts in different areas in centres of excellence across the country, so that they can reach their full potential.
- With children drawn from all over the country, the DHRUV programme reflects the true spirit of *Ek Bharat Shrestha Bharat*.

D. Role of Space Technology in Imparting Informal Education to Farmers

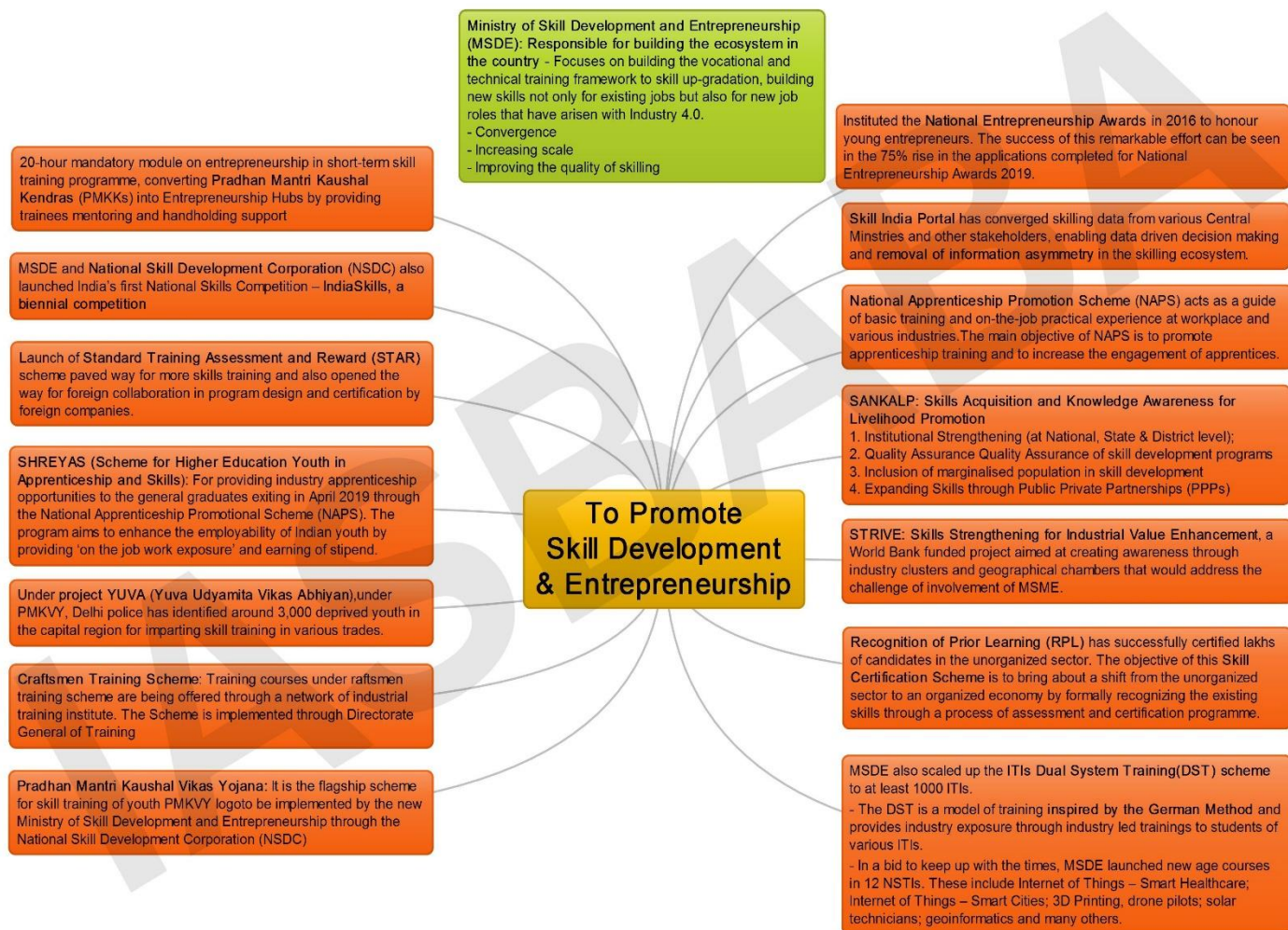
- During SITE programme, TV documentaries on agriculture made in vernacular languages were beamed to farmers on improving agricultural practices.
- Later during APPLE and INSAT utilization programmes, TV documentaries specific to various subjects on agriculture were made and telecast through satellites and they have been continuing.
- Weather monitoring satellites like Kalpana and INSAT – 3D have become instrumental in the accurate weather prediction. Remote sensing satellites have enabled our agricultural scientists to detect crop diseases, accurately estimate crop acreage, crop yield, soil quality, which ultimately will bring benefits to the farmers.

E. Young Scientist Programme (Yuvika)

- Yuvika is primarily aimed at imparting basic knowledge on space technology and its applications as well as space science to the younger ones with the intent of arousing their interest in the emerging areas of space activities.
- The two week long residential training programme involves invited talks and experience sharing by the eminent scientists, facility and lab visits, hands on training, exclusive sessions for discussions with experts and more importantly, a feedback session.

F. Samwad with Students

- It was launched by ISRO as part of its enhanced outreach programme. The interaction of scientists with students goes a long way in awakening the curiosity and creativity lying inside the student community.
- With this in mind, as well as with the intention of making our young students proud of their country's achievements in space through the narrative of ISRO scientists themselves, 'Samwad with Students' programme was launched.



Education Quality Upgradation and Inclusion Programme' (EQUIP) is a vision plan aiming at ushering transformation in India's higher education system by implementing strategic interventions in the sector over five years (2019-24).

Institution of Eminence (IoE)

- Ten institutions in public sector and 10 institutions in private sector have to be declared as IoE.
- Each IoE will be eligible to receive Rs.1000 crore during next 5 years

SWAYAM 2.0 is initiated with enhanced features and facilities to offer online degree programmes through SWAYAM by top ranking universities.

SWAYAM PRABHA - DTH Educational Channels

- It is a project to telecast high-quality educational programs through 32 DTH channels on 24/7 basis to reach out to students/learners of India with wide reach and minimal cost.
- It also aims to provide dedicated channels 'IITPAL' to assist the students of XI and XII standards aspiring to join premier educational institutions in the country

HIGHER
EDUCATION

Key Initiatives in Education

SCHOOL
EDUCATION

NISHTHA - National Initiative for School Heads' and Teachers' Holistic Advancement - to improve learning outcomes at the elementary level through an Integrated Teacher Training Programme

The Pradhan Mantri Innovative Learning Program (DHRUV) was launched to identify and encourage talented children to enrich their skills and knowledge. It will act as a platform to explore the talent of outshining and meritorious students, and help them achieve excellence in their specific area of interest.

One of World's largest Integrated Online Junction for - school Education '**Shagun**' is an over-arching initiative to improve school education system by creating a junction for all online portals and websites relating to various activities of the Department of School Education and Literacy.

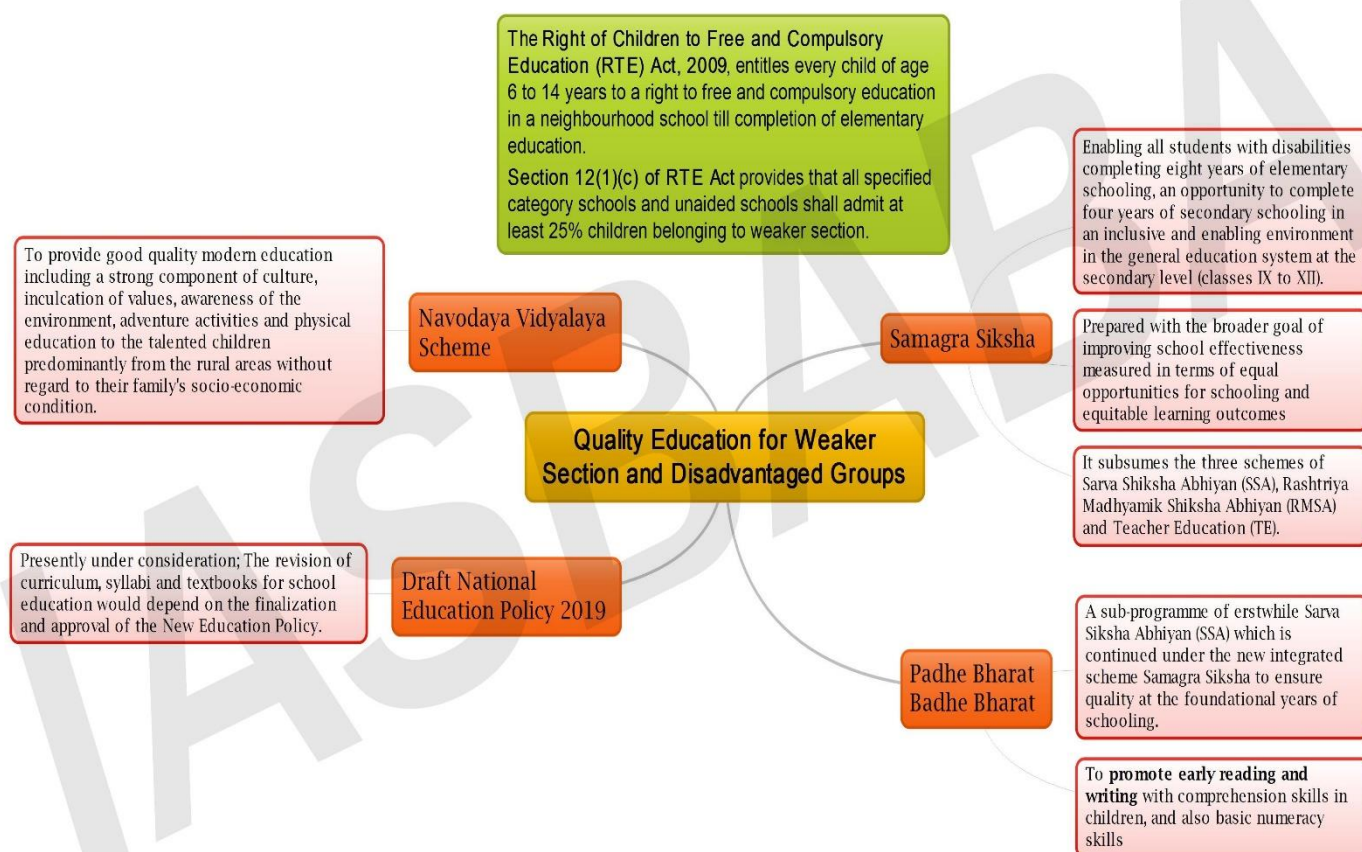
Unified District Information System for Education Plus(UDISE+) - To ensure quality, credibility and timely availability of information from all the schools in the country, the revamped UDISE+ has been launched. The Data Analytics portal gives information about the aggregated position of the school.

Digital Infrastructure for Knowledge Sharing (DIKSHA) 2.0 was launched in 2017 for providing digital platform to teachers giving them an opportunity to learn and train themselves and connect with teacher community.

Operation Digital Board (ODB)'s aim is to provide by March 2023, two smart classrooms for every Secondary/Senior Secondary schools

Quality Improvement Programmes

- **Deeksharambh** - A guide to Student Induction Programme has been launched.
- **Learning outcomes based curriculum framework (LOCF) revision** - New Curriculum in 16 subjects which is based on LOCF has been uploaded on UGC website to facilitate universities to revise the curriculum.
- **Scheme for Trans-disciplinary Research for India's Developing Economy (STRIDE)** - Launched for promoting quality research by faculty and creation of new knowledge.
- **PARAMARSH** - A scheme to mentor institutions seeking National Assessment and Accreditation Council accreditation.



All the best 😊

