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Kurukshetra Compendium

February, 2020

Skill Development

Skill development in India: Thoughts and Ideas

- Skill development, especially in a country like India with its large young population, which is estimated to be 34.33 per cent of total population in 2020, assumes greater importance to effectively reap the demographic dividend. Skill development leads to improved productivity, employment, self-employment, economic growth and consequently poverty reduction.
- Skilling the growing workforce would improve their productivity and employability which, in turn, will improve incomes and the quality of life.

Skilling to be Made Aspirational:

- To build a sustainable skilling ecosystem, skilling along with vocational education needs to be made aspirational and sought after. Today vocational courses have low acceptability due to several reasons including lack of well-defined career progression and low awareness among the stakeholders. ecosystem, which besides making the workforce present and future ready, would also address the concerns of women who for several reasons including family commitments, take a break from work and then want to rejoin.
- The skilling ecosystem also needs to address the requirements of persons retiring early and those seeking career progressions.

Online Skilling to be encouraged:

- It is perceived as a preferred option for those who have not succeeded in the formal education system or have opted out of it. Information, Education and Communication (IEC) efforts to sensitize all the stakeholders would go a long way in making skilling and vocational education aspirational.
- These skilling competitions should be encouraged at all levels and performances should be showcased to create more world champions in order to make skilling acceptable and aspirational.

Strengthen skilling ecosystem:

- To strengthen the skilling ecosystem, we also need to understand youth preferences and gauge their aptitude and interest. Mapping aspirations of the youth is important for sustainable skill development and making the skilling ecosystem more demand driven.
- The use of psychometric tests along with personal counselling, career guidance and awareness drives in rural areas could help assess and shape youth aspirations. At the same time, regular skill gap studies and assessment of industry demand would go a long way in matching demand with supply and shaping policies.
- Complementing the existing skilling ecosystem with increased use of Online Skilling which, in a technologically-driven environment, appears to be a viable, cost effective solution that would enable a person to select a trade of his/her choice, with flexible time and pace of learning and not be bound by courses offered by training centres in his/her vicinity should be encouraged.
- Online skilling would increase the span of both horizontal as well as vertical reach of youth to skill courses. This also implies that online skilling would improve the reach of rural youth to formal training systems as they would be able to access these training courses online.
- In rural areas where personal internet connectivity may not be fully established, an integrated On-Premises Training Module can be used at the existing Skill Centres, Common Service Centres (CSCs) or other E-kiosks.

Reskilling and Upskilling:

- Along with fresh skilling, India requires a sustainable reskilling and up-skilling. The role of private sector, industry, industry associations and SSCs would assume great significance in designing the courses and curriculum for online skilling and continuously updating it to keep it relevant and future ready.
- Government would have to take a lead in promoting this online skilling platform and preparing the courses and curriculums. Private sector partnership in the same should also be encouraged.

Private Sector Participation:

- Private sector and industry participation should be leveraged in strengthening the skilling ecosystem. Enhanced industry linkages could lead to more employment opportunities for skilled candidates as they would be industry ready.
- Industry associations and local industry chambers could also be engaged for providing entrepreneurial mentorship and hand-holding for the candidates who, after skilling, would like to start their own venture and become job creators rather than job seekers.

Linking Skill to Entrepreneurship:

- To ensure employability, employment, entrepreneurship and self-employment amongst skilled youth the skilling curriculum should have a fair dose of entrepreneurship and know-how to start one's own enterprise. Skilling should create not only job seekers but also job creators and job givers.
- Self Help Groups (SHGs), their federations, NGOs, besides Industry associations. Chambers of Commerce, Sector Skill Councils, etc., should also be roped into provide entrepreneurial handholding especially in rural areas, where we need to create more diverse employment opportunities.
- Necessary credit support along with market linkages also needs to be provided. Setting up of incubation centres and cluster-based approach would give great impetus to this.
- Soft-skills training is also an indispensable part of skilling for both employment as well as entrepreneurship.

Role of Apprenticeship in Skilling:

- The need to strengthen and popularize apprenticeships in India is immense and immediate as it is one of the best ways of on-the-job skilling and increasing the employability of a person manifold.
- It is a win-win situation as the industry also gets a ready pool of trained, industry ready workforce. Apprenticeships need to be popularised and incentivised with measures like preference in recruitment, higher stipends for female apprentices and assistance to Micro, Small and Medium Enterprises (MSME) engaging apprentices. Besides increasing apprenticeships, this would also lead to increased female labour force participation.

Integrated Portal of Job Seekers and Job Givers:

- There is also a need to have a single integrated portal wherein all data of job seekers as well as job givers is available and regularly updated which will go a long way in augmenting matchmaking and placement of trained youth.
- It would also help industry get trained workforce of their choice and job seekers to search employment in location of their choice as this portal would become the go-to choice for both job seekers and job givers.

Skilling for Future Jobs:

- In the age of rapid technological advancements, it is also immensely important to prepare the country's workforce for future jobs by constant up-skilling and reskilling efforts. Many emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML),
- Robotics, 3D Printing, Internet of Things (IoT) and Blockchain are shaping innovations in business models and processes.
- Thus, there is an imperative need to introduce new skill courses and training, including reskilling and up-skilling, to prepare Indian youth and workers for these emerging job roles and to be future ready both for domestic and international opportunities. Private sector and industry have a great role to play in devising a skilling curriculum for making the workforce future ready.

Skilling for Global Markets:

- India should leverage its demographic dividend by skilling labour force for global markets which would support the vision of making India the 'Skill Capital' of the world.
- As Indian labour would become equipped with international industry standards and processes, an increased number of Multinational Companies and overseas producers would be encouraged to set up their manufacturing units in the country which would in-turn support the 'Make in India' campaign of the government.
- Skilling for global markets can be facilitated by setting up specialized market research cells which would conduct demand-supply gap analysis in major employing sectors in different economies, thereby identifying opportunities for the Indian labour force and also the skill sets required to equip them for these opportunities.

- The use of our diplomatic missions abroad should also be strengthened for necessary market information and connecting with the governments and companies in need of trained workforce situated there, and also for projecting future requirements.
- To train youth with skills specific to international market demands, specialized skill hubs could be set up which would impart training as per technical and non-technical skill requirements.
- Industry help would be required to set up these training hubs for which private sector participation should be encouraged. Encouraging government to government tie ups could ensure better protection of workers' rights. Work in this direction is ongoing and needs to be strengthened and scaled up.

Conclusion:

- India has made huge progress in the field of skilling, but keeping in mind its huge potential and large number of people to be skilled, sustained and innovative efforts in right earnest involving all stakeholders is the need of the hour.
- For India to become the skill capital of the world, skilling of rural India assumes great importance as it would also enhance employability, employment and entrepreneurial activity in rural areas, where the majority of the population still resides.

Skill development: A way forward

- The National Policy for Skill Development and Entrepreneurship 2015 mentions that more than 54 per cent of India's population is below 25 years of age and 62 per cent of India's population is aged between 15 and 59 years. This demographic dividend is expected to last for the next 25 years.
- The policy also says that the average age of the population in India is 29 years as against 40 years in USA, 46 years in Europe and 47 years in Japan. Labour force in the industrialized world is expected to decline by 4 per cent, while in India it will increase by 32 percent.
- The demographic advantage of India in a real sense can be transformed into demographic dividend by imparting right skills to the youth in tune with the current and future skills in demand.

Workforce breakup in India:

- India has a total workforce of about 52 crore out of which 49 per cent are employed in agriculture, however, their contribution is only 15 per cent of the GVA (Gross Value Added). In China only 21 percent of the workforce is employed in agriculture. Growth has often been highest in sectors that are relatively capital intensive, such as automobiles and pharmaceuticals.
- There is a need to increase the pace of generating good quality jobs to cater to the growing workforce, their rising aspirations and to absorb out-migration of labour from agriculture.
- By some estimates, the Indian economy will need to generate nearly 70 lakh jobs annually to absorb the net addition to the workforce. Considering the shift of labour force from low productivity employment, 80-90 lakh new jobs will be needed in the coming years.

Globalisation effect in market:

- Globalisation, growing domestic market, automation and adoption of new technologies like AI, Robotics and Internet of Things by various segments of the economy have significantly impacted skills in demand.
- Though there has been a significant focus on skill development, the employability of skilled manpower has remained a big challenge. As per India Skills Report 2019, the employability of final year students of ITIs and polytechnic has declined in recent years and Electronics and Communication Engineering (ECE) and IT courses have the highest employability rates.
- Lack of focus on industry linkages and core employable skills were the main reasons for the downturn in employability. This is corroborated by the fact that engineering courses which are linked with industries or corporates have higher employability rates.
- The report also revealed that around 43 per cent of engineers from various institutes across the country had remained unemployed. In such a situation, skill development needs to be more comprehensive by including industry alliances for internship and employable skills within its ambit.

Labour Force Participation Rate:

- Labour Force Participation Rate is one of the key indicators, which explains the conditions of labour market and the extent of population that is economically active.

- The Labour Force Participation Rate (LFPR) is defined as the percentage of persons in the labour force among the persons in the population. LFPR for the persons 15 years or above was nearly 49.8 per cent.
- The LFPR for persons of age 15-29 years was 38.2 per cent in 2017-18. LFPR had declined over the years by 5-6 per cent from 2011-12 to 2017-18. Workforce including the persons who worked for a relatively long part of a year constituted around 34.7 per cent in the year 2017-18.
- Worker Population Ratio (WPR) in India had also decreased from around 42.3 per cent in 1977-78 to 34.7 per cent in 2017-18. WPR during 2017-18 for the persons of age 15-29 years was 31.4 per cent.
- Sector-wise employment status as per the NSSO survey reveals that there has been reduction in persons engaged in agriculture. The proportion of rural male workers engaged in agricultural activities fell from 59.4 per cent in 2011-12 to 55 per cent during 2017-18.

Proportion of workers:

- The proportion of workers in rural areas engaged in manufacturing sector, trade, hotel and restaurant, transport, storage and communication has increased as per the NSSO's latest report.
- With the advent of government focus on infra-sector, there has been structural shift of employment from agriculture to non-farm sector like construction, trade and transport.
- In addition to this, introduction of advanced automation technology has given boost to growth of information technology and business process outsourcing sectors.
- These sectors are expected to provide employment to many trained youth provided that they acquire the skills to meet the changing needs.
- Supply of appropriately skilled manpower is a necessary condition for reducing unemployment, meeting the aspirations of youth, increasing productivity and remuneration.
- On the skill development front, the mismatch between demand and supply of skilled labour is one of the causes for increasing Unemployment Rates among youth.
- It should be made compulsory for Industry stakeholders to publish their vacancy details through the National Career Centres with some incentives given to industries, which are hiring trainees of flagship schemes like PMKVY and DDU-GKY.
- Training capacities of trainers in training institutes need to be upgraded to ensure the availability of qualified trainers. Trainers training centres should be established in each of the districts of India. The training centres in addition to providing training should conduct training

Way forward:

- As per NITI Aayog'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 both at the national and state levels. Talukas/districts should be required to provide the information required for such mapping.
- In addition to this, Panchayat should be a geographical entity to mobilise rural youth for skill development and training programmes in a formal manner and Panchayat office should maintain a The training centres for trainers should have labs equipped with advanced tools and technology.
- Trainers training should include a relevant industry exposure component in the course work. Master trainers may be selected from reputed industries to train the trainers.
- MSDE should have a single regulatory body with branches in all states to lay down minimum standards for all players in the skilling system like training providers, assessors, etc., and to issue NSQF aligned certificates.
- Centralised MIS should be there to provide information on skill development on all types of short-term training programmes implemented by various departments, ministries, institutes and other organisations.
- MSDE should issue guidelines to the TSPs regarding training centre locations and selection of job roles through state level officials and TSP should obtain clearance from labour department prior to starting the training programmes.
- More emphasis should be given to link the labour department with skill development missions at the state/district level. The Labour department should generate demand for skilled manpower and coordinate accordingly with the skill development functionaries.

- NITI Aayog's report, Strategy for New India@75 states that to address the requirement of skilled workers in the unorganised sector, scaling up RPL is required under the PMKVY, using bridge training, apprenticeship, dual training, work-based learning and advanced courses.
- NITI Aayog's report, Strategy for New India@75, also posits that an Overseas Employment Promotion Agency should be set up at the national level under the Ministry of External Affairs, apart from working with the MSDE to train and certify Indian workers keen on overseas employment, in line with international standards.
- Internship in industries is quite important as both the employer and trainee understand each other's requirements. So, more emphasis should be given on increasing interactions between industry and trainees.

Initiatives to promote skill development and entrepreneurship

- The Ministry of Skill Development and Entrepreneurship (MSDE) has been responsible for all skill development efforts across the country, from building the vocational and technical training framework to skill up-gradation, building new skills not only for existing jobs but also for new job roles that have arisen with Industry 4.0.

Know! the objectives:

- Our vision statement is "to create an ecosystem of empowerment by skilling on a large scale at speed with high standards and to promote a culture of innovation based entrepreneurship which can generate wealth and employment so as to ensure sustainable livelihood for all citizens in the country".
- With this insight, the Ministry laid special emphasis in 2019 on convergence, increasing scale, meeting aspirations of the youth and improving the quality of skilling.
- This has led to enhanced skilling opportunities and the creation of a trained workforce in the country, besides inculcating the entrepreneurial spirit among the public at large.

Know! about the inception

- Hon'ble Prime Minister Shri Narendra Modi launched the Skill India campaign in July 2015, with an aim to train India's youth in market-relevant skills empowering them for the New India and the global market requirements. The programme has been able to instill a sense of self confidence in the youth of the country and have provided them with a platform to support themselves with the skill training of their choice.
- According to a 2015-16 report released by MSDE, less than 5 per cent of India's workforce is formally skilled. Compare this to South Korea (96 per cent), Japan(80 percent), Germany (75 per cent), the United Kingdom (68 per cent) and the United States (52 per cent), and we have a lot of ground to cover. Our aim is to increase these numbers, adopt successful models from these nations and empower many more of the country's youth.
- Driving convergence across various schemes of vocational training, National Skill Development Mission formulated in 2014, gave a fillip to the skill development and entrepreneurship efforts in the country.
- As a result of the tenacious efforts under NSDM, more than one crore youth are being imparted with skills training every year under various programmes of the Central Government.

Significance of those programmes:

- Among the various initiatives and programmes under the umbrella of Skill India, much-needed reforms have been introduced to apprenticeship training. This has been instrumental in catering to the needs of both a burgeoning talent pool and the industry that seeks trained youth.
- The Guru Shishya Parampara has been the essence of the Indian education system dating back to ancient times when students learnt from textbooks and through experiences, helping reality mirror thought.
- It is an acknowledgement of this tradition that the Government introduced comprehensive reforms in Apprenticeship Act, 1961.
- To recognise and celebrate the contributions of the trainers and gurus towards Skill India, we also organised the first-ever Kaushalacharya Awards to felicitate trainers from different sectors for their exceptional contribution towards creating a future-ready skilled workforce.
- These trainers have helped thousands of youth and have inspired many more technically-equipped and experienced people to join the Skill India Mission. Industrial giants Germany and Japan, where the working age population is a fraction of that of India's, have three million and 10 million apprentices, respectively. China has 20 million. India has just 0.4 million, which amounts to less than 0.1 per cent of the employed workforce.

Advantages for India:

- This highlights the potential that the demographic advantage of a ‘young’ nation like ours has. It is estimated that Indian industry can absorb 10 million apprentices annually, proving that there is huge capability, potential and scope for an apprenticeship-based approach. The country’s youth will trigger this burst to the creation of a modern industrial ecosystem.
- The New India’s dream is also attuned towards skill training with demands of Industry 4.0. The new Industrial Age is boosted by unprecedented technological advancements in Artificial Intelligence, automation, machine learning, robotics and blockchain.
- It calls for an urgent need of trained professionals in varied fields where skills are based on the demands of the present economy. Our visionary programmes like Make in India, Start-up India and Skill India are identifying the talent pool for positioning the country as the next big global destination for investors.
- India is soon expected to rank among the world’s top three growing economies and the top three manufacturing destinations.

National Apprenticeship Promotion Scheme:

- Started in August 2016, NAPS acts as a guide of basic training and on-the-job practical experience at workplace with various industries.
- The main objective of the scheme is to promote apprenticeship training and to increase the engagement of apprentices.

A number of exemplary contributions have additionally made it possible to achieve project so far.

- The RPL project with the Ministry of Power (SAUBHAGYA) aimed at achieving universal household electrification registered over 22,215 candidate certifications under Lineman Distribution and Technical Helper Distribution job roles.
- The RPL project with CREDAI, an initiative to fulfil the gap and upgrade skills of the construction workers listed over 14,135 certifications of candidates under Assistant Bar Bender and Steel Fixer, Assistant Shuttering Carpenter and Assistant Mason. Over 2.81 million
- The MSDE is also working closely with Central Public Service Units for their support, particularly in bolstering the National Apprenticeship Promotion Scheme (NAPS), so we can stay ahead of the curve if we are to scale the peak of growth. candidates have been enrolled under the and Start-Up India are encouraging entrepreneurship among Indians. Bilateral meetings have been organised at regular intervals between officials of MSDE and their counterparts in countries like Singapore, the UAE, Japan, Canada and Australia to boost capacity for skilled workforce in the country.
- MSDE and National Skill Development Corporation (NSDC) also launched India’s first National Skills Competition- IndiaSkills, a biennial competition.
- This year, IndiaSkills 2020 will provide a platform for skilled and talented Indian youth to showcase their abilities at regional and national level competitions in over 50 skills. Regional legs of the competitions are organized across four zones, culminating at the national competition in Delhi.
- Winners of India Skills will then get a chance to represent the country at the WorldSkills International Competition to be held in China in 2021.
- WorldSkills International Kazan was held in 2019 and the 22 winners of India Skills 2018 and their experts had represented the country with their outstanding performance at this global platform also known as the Olympics of skills.
- India won one gold, one silver, two bronze and 15 Medallions of Excellence. India was ranked 13th among 63 countries that participated in the competition, making it the best finish for the country in the coveted skill championship. They were felicitated with certificates and cash prizes for their remarkable performance.
- Global investors are viewing India as a business destination. Strong fundamentals have given our economy the right push to create a stable business environment; and market-oriented reforms and initiatives like Make in India, Digital India, Mudra Yojana, Atal Innovation Mission, 59-minute loan, Stand-up India

Way forward:

- Comprehensive reforms have come into play to build awareness around skilling and we are witnessing a mind shift onwards vocational training. It is my faith that as facilitators, we will be able to bring together the industry and youth to assure them with a future led by a robust skilling framework.

- The roadmap to making India the ‘Skill Capital of the World’ is fast becoming fruition reality. We have pledged to provide constant support to the youth of our nation who are joining the movement for building a “Kushal Bharat, Kaushal Bharat”.

Skilling the youth through Science and Technology

- India is expected to have 34.33 per cent share of youth in total population by 2020. There is a need for skilled youth in the field of science and technology in the country so that their proficiency in various tasks can be fully utilized. Skill development programmes are being conducted with the aim of connecting large youth population in various science and technology related enterprises.

Importance of skill development through Science and Technology:

- The skill development programmes are being organised by various units and councils of the Department of Science and Technology, Government of India, and by various national laboratories of the Council of Scientific and Industrial Research, Government of India. The Ministry of Environment, Forest and Climate Change also initiated the Green Skill Development Programme.
- Major changes in the Indian economy and the accelerated rate of industrial growth imply a larger demand for vocational skills. The rapid migration of rural population to urban areas has also created a demand for trained people to meet the needs of urban services. Further, a variety of new services have emerged such as financial, health, media, advertisement, urban utilities, cable TV and entertainment, and telecom services.
- There has also been a sharp growth and new product/service introduction in the agro-food processing industries for both internal use and for exports, requiring special skills.

Science, Technology and Innovation Policy:

- As per the India’s Science, Technology and Innovation Policy (STI) 2013 “science, technology and innovation should focus on faster, sustainable and inclusive development of the people. The policy seeks to focus on both STI for people and people for STI.
- It aims to bring all the benefits of Science, Technology and Innovation to the national development and sustainable and more inclusive growth. It seeks the right sizing of the gross expenditure on research and development by encouraging and incentivizing private sector participation in research and development, technology and innovation activities.
- A Strong and viable Science, Research and Innovation System for High Technology led path for India (SRISHTI) are the goal for the STI policy. This can only be achieved through skill development in science and technology. The key features of STI policy also include, “enhancing skills for applications of science among the young from all social sectors”.

Skill Development Training through Science and Technology (STST):

- Skill Development Training Through Science and Technology (STST) aims at development of skills through training intervention by developing special curricula and creation of models for offbeat and innovative skill areas.
- The National Science and Technology Entrepreneurship Development Board (NSTEDB), DST has initiated programmes of entrepreneurship development and self-employment generation using Science and Technology methods and techniques and by using the expertise developed in technical and Research and Development institutions for upgrading skills.
- With Development of new and better technologies it becomes essential to upgrade the skills of man-power using such enhanced versions of equipment/tools.
- Training has been a long felt need in some of these areas and NSTEDB has been trying to fulfill this gap right from its inception. The present STST addresses itself to upgrade the skills in a need-based manner for a select group of processes and technologies.
- The main objectives of STST are to demonstrate that skills can be developed through the application of Science and Technology in order to harness the resources of Science and Technology infrastructure of the country, which have so far remained under-utilised as well as for skill development training to enhance quality of services/products and thereby enhancing income generation among skilled workers. Each training programme under STST will vary depending upon the type of trade.

National Implementing and Monitoring Agency for Training (NIMAT) NSTEDB and DST:

- With the objectives to promote and strengthen Science and Technology entrepreneurship, the NSTEDB sponsors. Entrepreneurship Awareness Camp, Entrepreneurship Development Programme/Women Entrepreneurship Development Programme, Technology based Entrepreneurship Development Programme and Faculty Development Programme.

NIDHI-STEP / TBIS and NIDHI-PRAYAS:

- National Initiative of Development and Harnessing Innovation (NIDHI)-Science and Technology Entrepreneurs Parks and Technology Business Incubators (STEP/TBIS) are institutional linked facilities promoted by the Department of Science and Technology to nurture innovative and technologically-led new ventures during the initial and critical period i.e. the start-up phase.
- In the present climate of innovation in India, there is support available for both Research and Development of ideas and commercialization of products, especially that which is provided by STEPs and TBIs promoted by National Science and Technology Entrepreneurship Development Board (NSTEDB) of DST.
- However, the primary aim of the STEPs and TBIs is to tap innovations and technologies for venture creation by utilising expertise and infrastructure already available with the host institution, be it an academic, technical, management institution, or a technology and a research park.

Student Start-up NIDHI Award:

- Student Start-up NIDHI (National Initiative of Development and Harnessing Innovation) award aims to take forward student innovations in New Generation Innovation and Entrepreneurship Development Centre (NewGen IEDC) to commercialization stage and accelerate the journey of idea to prototype by providing initial funding assistance.
- National Science and Technology Entrepreneurship Development Board (NSTEDB), DST has taken this initiative of helping start-ups with initial / ignition funding. It aims to financially support (maximum 20 student start-ups each year with Rs 10 lakh each).
- There is a definite need to address the gap in the very early stage idea/ proof of concept funding. Promoting and Accelerating Young and Aspiring technology entrepreneurs (PRAYAS) is one of the nine programs, specifically made to support young innovators turn their ideas into proof-of-concepts.
- This support shall allow the innovators to try their ideas without fear of failure, hence allowing them to reach a stage where they have a ready product and are willing to approach incubators for commercialization. Hence NIDHI-PRAYAS can be considered a pre-incubation initiative and a source of Pipeline for incubators.

Knowledge Involvement in Research Advancement through Nurturing (KIRAN):

- This is an exclusive scheme for women with the mandate to bring gender parity in Science and Technology through gender mainstreaming. The programme is aimed at providing opportunities to women scientists who had a break in their career primarily due to family responsibilities.
- KIRAN is aimed to provide opportunities to women scientists and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering, focused on Science and Technology solutions of challenges/issues at the grassroots level for social benefit and create opportunity for self-employment and also a sustainable career for the women scientists.
- The scheme provides one year internship in the domain of Intellectual Property Rights (IPRs) which includes theory as well as hands on training in law firms.

Augmenting Writing Skills for Articulating Research- AWSAR:

- Augmenting Writing Skills for Articulating Research (AWSAR) is an initiative that aims to disseminate Indian research stories among the masses in an easy to understand and interesting format.
- AWSAR has been initiated by the National Council of Science and Technology Communication (NCSTC), to encourage, empower and endow popular science writing among young PhD scholars and post-doctoral fellows during the course of their higher studies and research pursuits.
- As over 20,000 youth are awarded PhD in Science and Technology every year in India, The scheme aims to tap this tremendous potential to popularise and communicate science and also to inculcate scientific temperament in the masses.

- One hundred best entries from PhD scholars are awarded in a year. Further, twenty entries are selected from articles submitted exclusively by postdoctoral fellows relating to their line of research for monetary incentives, the highest of which can go up to Rs. 1lakh. This programme is being coordinated by Vigyan Prasar, an autonomous institute of DST (Department of Science and Technology).

Green Skill Development Programme (GSDP):

- Green skills contribute to preserving or restoring environmental quality for sustainable future and include jobs that protect ecosystems and biodiversity, reduce energy and minimize waste and pollution.
- In line with the Skill India Mission, Ministry of Environment, Forest and Climate Change (MoEFandCC) has taken up an initiative for skill development in the environment and forest sector to enable India's youth to get gainful employment and self-employment, called the Green Skill Development Programme (GSDP). It enhances the employability of people in jobs that contribute to preserving or restoring the quality of the environment, while improving human wellbeing and social equity.

Technology based Entrepreneurship Development Programme (TEDP):

- CSIR, with its nearly 8000 highly talented Science and Technology Personnel, excellent inter-disciplinary expertise, state-of-the-art facilities and a pan-India presence, is in a unique position to contribute towards the government's enterprise of enhancing programmes in skill India and Stand-up India.

Some of the major skill development programmes of CSIR:

- CSIR-Central Leather Research institute Chennai and Andhra Pradesh Scheduled Castes Cooperative Finance Corporation (APSCCFC) signed an agreement for skill training, upgradation and entrepreneurship development of 10000 underprivileged candidates who are below the double poverty line with arc aim of creating income generation assets for their households enabling their socio-economic development.
- Technology based Entrepreneurship Development Programme (TEDP) primarily focuses on training and development need of Science and Technology entrepreneurs in a specific technology area (for example, leather, plastic, electronics and communication, fragrance and flavour, instrumentation, sports goods, biotechnology, IT computer hardware, food processing, bio-medical equipment, glass and ceramics, jute products sustainable building materials, herbs and medical plants processing, etc.).
- The participants are provided with hands-on training in indigenous technologies developed by Research and Development institutions that are available for commercial exploitation.

CSIR's Integrated Skill Initiative

- CSIR-institute of Himalayan Bioresource Technology, Palampur initiated Skill Development Training Programmes on animal breeding and housing practices, hands-on laboratory experiment and analytical exposure, gardener, plant tissue culture, floriculturist protected cultivation and laboratory practices on animal houses.
- CSIR-Central Drug Research Institute, Lucknow started skill development programmes on healthcare and life sciences and offers six certificate courses of level III to VII under the CSIR-CDRI Skill Development Programme.
- Skill shortage remains one of the major constraints to continued growth of the Indian economy.
- Council of Scientific and Industrial Research's Integrated Skill Initiative Programme has been initiated with integrated skill initiatives in diverse areas with varying duration by the CSIR's labs.
- All these training programmes are interconnected and linked to industry requirements and thus would invariably contribute to the subsequent employment generation, including entrepreneurship. small-scale
- CSIR-Indian Institute of Toxicology Research, Lucknow is contributing to the CSIR Skill Initiative by initiating Skill Development Certificate Course in Regulatory-Preclinical Toxicology with the emphasis on specialized courses related to environment, regulatory toxicology and computational biology where skill development is either inadequate or almost lacking.

The objectives of these programmes are to skill the youths in such a way that they get employment.

- This knowledge-gap can be addressed by professionally trained youth of India. The courses will meet the aspirations of students, young researchers and industry-sponsored personnel looking for training and will provide an opportunity for skill development and hands-on experience in the chosen area. entrepreneurship. Resurgence of entrepreneurship is the need of the hour.

- Women entrepreneurs must be moulded properly with entrepreneurial traits and skills to meet changing trends and challenging global markets, and also be competent enough to sustain and strive in the local economic arena.

Present context about women entrepreneurs:

- The 6th economic census, we will find that 13.76 percent of MSME's are women owned i.e. approximately 8.05 million out of 58.5 million businesses. The World Bank Enterprise Survey Data, an internationally comparative data set, suggests that 10.7 percent of MSMEs have female participation in ownership.
- 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. Women's enterprises are also mainly micro sized or proprietary and the majority are informal.

Women Entrepreneurs in India: Opportunities and Challenges

- Looking into the state level distribution of women-owned enterprises, we will find that there is a variation in the distribution of women-owned enterprises across India at state level, suggesting diversity in the enabling environments for women entrepreneurship. The largest share in the number of establishments under women entrepreneurs are clustered in the southern states of India. In terms of female owned proprietary establishments,
- Globally, the business world has realized and is working on war footing to create entrepreneurship as the final remedy to overcome all types of business and market challenges. Women are willing to take up business and contribute to the nation's growth.
- Their role is being recognised and steps are taken to promote women out of the top ten states, six states are from North East India.
- In the last five decades, there have been phenomenal changes in status and workplace diversity in India.
- During the fifties, there were two categories of women who started their own business— one who took to creating and managing entrepreneurial activity where there was no male earning and the second comprised of a very small percentage of women who had the courage to break the glass ceiling.

Why more women entrepreneurs needed?

- Economic growth: Women can start a new business that caters to a different market or niche than their male counterparts. Enabling women benefits future generations because women tend to spend more time on their children's education and health, which in turn boosts productivity.
- Narrowing gender gap: Women entrepreneurs inspire other women to start business leading to job creation for women, which ultimately helps in bridging the gender gap in workforce. Narrowing the gender gap in employment will increase global income.
- Company culture and safety at workplace: Creating and preserving a strong positive company culture is a prerequisite for the growth and long term success of any company.
- Studies show that a women-led company tends to have better company culture, high values and transparency. Women have struggled with how to maintain a work-life balance. It is seen that women-led organisations are more sensitive to safety issues.

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