सत्यमेव जयते

EDUCATION QUALITY UPGRADATION AND INCLUSION PROGRAMME (EQUIP)

FIVE YEAR VISION PLAN 2019-2024

Department of Higher Education,
Ministry of Human Resource and Development

EDUCATION QUALITY UPGRADATION AND INCLUSION PROGRAMME (EQUIP)

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DEPARTMENT OF HIGHER EDUCATION
MINISTRY OF HUMAN RESOURCE DEVELOPMENT
GOVERNMENT OF INDIA

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Abbreviations

AICTE	All India Council for Technical Education
AISHE	All India Survey on Higher Education
ARPIT	Annual Refresher Program in Teaching
B.Ed	Bachelor of Education
B.VOC/D.VOC	Bachelor of Vocation/ Diploma of Vocation
BCA/MCA	Bachelor of Computer Applications/ Master of Computer Applications
BLA/BLE	Bachelor of Liberal Arts/ Bachelor of Liberal Education
BoG	Board of Governors
BOM	Board of Management
CALEM	Centre for Academic Leadership and Education Management
CBSE	Central Board of Secondary Education
CoE	Centres of Excellence
CU	Central University
DU	Deemed University
EBB	Educationally Backward Blocks
EBDs	Economically Backward Districts
EEC	Empowered Expert Committee (EEC)
EQUIP	Education Quality Upgradation and Inclusion Program
ERP	Enterprise Resource Planning
FLR	Female Literacy Ratio
FO	Finance Officer
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GIAN	Global Initiative of Academic Networks
HE	Higher Education
HEI	Higher Education Institution
HRM	Human Resource Management
ICT	Information and Communications Technology
IDP	Institutional Development Plan
IGNOU	Indira Gandhi National Open University
IIC	Institution's Innovation Council
IIRC	Institution's Innovation and Research Council
IIT	Indian Institute of Technology
IMD	Institutional Mentoring Division
IMPRINT	Impacting Research Innovation and Technology
INI	Institution of National Importance
INSA	Indian National Science Academy
IoE	Institutions of Eminence
IT	Information Technology
LEAP	Leadership for Academicians Program
LOCF	Learning Outcomes based Curriculum Framework
LSCs	Learning Support Centre
MDC	Model Degree College
MHRD	Ministry of Human Resource Development
MIC	MHRD's Innovation Cell
MoA	Memorandum of Association
MOOC	Massive Open Online Course
MSME	Micro Small and Medium Enterprises

NAAC	National Assessment and Accreditation Council
NBA	National Board of Accreditation
NBAH	National Benchmarking Authority for HEIs
NCTE	National Council for Teacher Education
NIOS	National Institute of Open Schooling
NIRF	National Institutional Ranking Framework
NIT	National Institute of Technology
NRF	National Research Foundation
NSQF	National Skills Qualifications Framework
NTP	National Tutor's Program
OBC	Other Backward Class
ODL	Open and Distance Learning
PDF	Post Doctoral Fellow
PG	Post Graduation
PhD	Doctor of Philosophy
PMRF	The Prime Minister's Research Fellowship
PPP	Public Private Partnership
QS	Quacquarelli Symonds
R&D	Research and Development
R&I	Research and Innovation
RGI	Registrar General of India and Census Commissioner, India
RUSA	Rashtriya Uchchtar Shiksha Abhiyan
SACHE	State Advisory Council on Higher Education
SC	Schedule Caste
SC/ST	Scheduled Caste/ Scheduled Tribe
SCHE	State Council of Higher Education
SERB	Science and Engineering Research Board
SOU	State open Universities
SPARC	Scheme for Promotion of Academic and Research Collaboration
SPU	State Public University
ST	Schedule Tribe
SU	State University
SWAYAM	Study Webs of Active –Learning for Young Aspiring Minds program
THE	Times Higher Education
TLC	Teaching Learning Centres
UAY	Uchchtar Aavishkar Yojana
UG	Under graduation
UGC	University Grants Commission
UPE	University for Potential for Excellence
VC	Vice Chancellor
VDC	Vocational Degree college
WIPO	World Intellectual Property Organisation
WUR	World University Rankings

Preface

Dr. Ramesh Pokhriyal 'Nishank'
Hon'ble Minister of HRD

India enjoys an unprecedented demographic dividend, with 65% of the total population below the age of 35 years. This population will continue to contribute to the economy actively for at least the next three decades. The burden of ensuring that this population is educated and skilled lies with the higher education sector of the country. India boasts of the largest number of higher educational institutions in the world with more than 40,000 colleges and universities under various managements and with a total enrolment of 3.8 million students in the age group of 18 to 23 years. However, this enrolment translates into a Gross Enrolment Ratio (GER) of 25.8, which is far below the global average as well as the GER of major western countries. It is essential to bring in systemic interventions to improve this ratio to more than 40 in the next five years. Also, the overall GER does not bring out the differences in the GER between regions, between social groups and between genders. A national effort is, therefore, to be launched to raise the GER with equity and inclusion.

The **technological advancements** have provided tools for taking quality education into the under-served areas. India has developed its national MOOCs portal SWAYAM, in which more than 10 million learners have enrolled for more than 2,000 courses so far. The 33 DTH channels, named SWAYAM Prabha, have been airing high-quality educational content on a 24x7 mode to every nook and corner of the country. The National Digital Library (NDL) initiative has brought together more than 2.5 crore digital learning resources and is made available free of cost to every student and every learner in the country. Encouraged by the technological advancements and penetration of the telecom services far and wide, the online MOOCs, under which the Universities run virtual courses without any dilution of quality, has become possible. All these initiatives would need to be promoted and should help in bringing forth a quantum jump in the quality of academic interaction in the classrooms, apart from reaching the unreached.

The **quality** of higher education requires immediate attention. Not only does the quality vary from type of institutions, between regions, but also, there is a wide range of variations between various institutions. We need to assure that every student who is a part of the higher education system shall have a minimum acceptable standard of education. This calls for the upgradation of teaching standards by not only bringing in new technologies but also introducing unique pedagogical aspects. The curriculum of various subjects would need to be continuously upgraded to reflect the requirements of the society/economy. Upgrading of curriculum and pedagogy would need training of the teachers in large numbers. The conventional system of teacher training would, therefore, need to be radically changed using technological advances. The quality mandates issued by UGC and AICTE have laid down strict standards for academic quality. However, translating them into action would require substantial investments.

Higher Education system has to produce new knowledge. The teaching-learning institutions would need to upgrade themselves into teaching and **research** institutions. This requires substantial investments in promoting research on the campuses and in establishing research culture in the teaching community. Various research efforts being funded by different agencies would need to be coordinated and brought under one leadership with a higher amount of resources and greater flexibilities. The funds provided for research have to increase, and more importantly, the quality of research should be of global standards. We need to incentivise high-quality research and at the same time, encourage more and more teachers to devote some part of their time in creating new knowledge. Government has launched several research initiatives such as Impacting Research Innovation and Technology (IMPRINT) for the technology domains, Impactful Research in Social Sciences (IMPRESS) for the social sciences, Scheme for Translational Research in Sciences (STARS) for the fundamental sciences, Scheme for Transdisciplinary Research for India's Developing Economy (STRIDE) for inter-disciplinary research in humanities and SPARC for cross-border research. These research initiatives would need to be strengthened, expanded, and better funded. There is a need to bring the industry into the research promotion so that the research is directed towards bringing in economic growth.
The Research Parks set up in institutions like IIT Madras have to lead the way by promoting innovations in the campuses. The **Smart India Hackathon** has started a new trend of students' participation in providing out-of-the-box solutions for the commonly found problems. The number of students participating in this effort is increasing by leaps and bounds. The MHRD Innovation Cell has been set up to promote innovation activities in higher education institutions, through hand-holding and guidance. Cognitive learning, mathematical skills, problem-solving abilities are to be promoted in the educational institutions by undertaking a major revamp of the existing mode of education.

The quality of higher education depends a lot on the **governance** structures. The existing governance would need to be changed, bringing in more significant technology in operations, greater transparency in functioning, and greater accountability in performance. The heads of the institutions have to lead this effort and would, therefore, require inputs for better leadership in problem-solving and in promoting innovation.

The higher education system has to create **employable** students. The current disconnect between 'what is taught in the class' and 'what is required by the society' is creating enormous wastage of human resources in the country. This national loss has to be arrested, and the education has to be tailor-made to suit the requirements of the society at large and the economy in particular. The movement of linking higher education students with the apprenticeship program under the program SHREYAS, the B.Voc programs and the internship models would need to be further strengthened and expanded to reach every student in the country. The students have to be provided career guidance support in the institution so that they can choose careers as per their aptitude.

India is fast emerging as a higher education destination. India can deliver premium a global best education at an affordable cost. The **Study in India** program launched in 2018 has identified the best 100 institutions in the country who have come forward and offered more than 20,000 seats for the international students. These institutions are also setting up global-class facilities for international students. The drive towards making available Indian education facilities for international students would need to be strengthened and systematically implemented. It is possible to increase the number of international students studying in India by ten times in the coming five years if appropriate investments are made in higher educational institutions.

The Indian higher educational institutions are making their mark in the global best Universities. Already 9 Indian institutions figure in the global best 500 universities (QS-2020). At least 50 Indian institutions can reach the global best ranking within a short period, provided appropriate support structure is created for promoting research and in building global class infrastructure. A systematic effort in this regard has been launched through the Institutions of Eminence scheme, and it has to be further strengthened.

Financing of higher education has been a matter of big priority for the government. Whereas the regular budget allocation would need to be expanded at a much faster rate, there is a need to find extra-budgetary resources to enhance the fund flow to the sector. The Higher Education Financing Agency (**HEFA**) has been set up for this purpose with a mandate to mobilise Rs.1 lakh crore for building infrastructure in the educational institutions. The higher educational institutions would need to be financially more robust by increasing their internal resources and revenues while protecting the interests of the weaker sections and to ensure that nobody is deprived of education because of economic reasons. We need to bring together alternative modes of finance for helping deserving students.

All these issues have been at the core of the higher education policy for the last several years. The National Education Policy, which is on the anvil, has made several recommendations to resolve the above issues. To deliberate on these issues, ten different **expert committees** were constituted in March 2019, and they have worked continuously for two months and have produced ten valuable reports suggesting implementable initiatives along with the investments needed, timelines required, and monitoring mechanisms for proper implementation. The chairpersons of these ten groups have been the following: -

Group Number	**Group Focus**	**Chairperson**
Group 1	Strategies for expanding access	Shri Hasmukh Adhia, Chancellor, Central University Gujarat
Group 2	Towards global best teaching/learning process	Dr. K. Kasturirangan, Chancellor, Central University of Rajasthan & former Secretary, Dept of Space; former Chairman - ISRO
Group 3	Promoting Excellence	Shri Pawan Goenka, Chairman, BoG, IIT Madras
Group 4	Governance reforms	Prof M S Ananth, Chairman, National Testing Agency (NTA)
Group 5	Assessment, Accreditation & Ranking systems	Prof Surendra Prasad, former Director, IIT Delhi
Group 6	Promotion of research & innovation	Dr. Vijaya Raghavan, Principal Scientific Adviser to PM
Group 7	Employability & entrepreneurship	Shri Ajit Balakrishnan, former Chairman, IIM Kolkata
Group 8	Using Technology for better reach	Prof Deepak Pathak, Chairman, NIT Goa & Prof IIT Bombay
Group 9	Internationalisation	Shri Amitabh Kant, CEO, NITI Aayog
Group 10	Financing higher education	Shri. Kris Gopalakrishnan, former CEO, Infosys.

Several senior officers in the Ministry and the RUSA team have ably assisted these groups. The entire effort has been coordinated by Prof Venkatesh Kumar of the Tata Institute

of Social Sciences who is also the National Coordinator of RUSA. The direction he provided is invaluable in seeing this Project through.

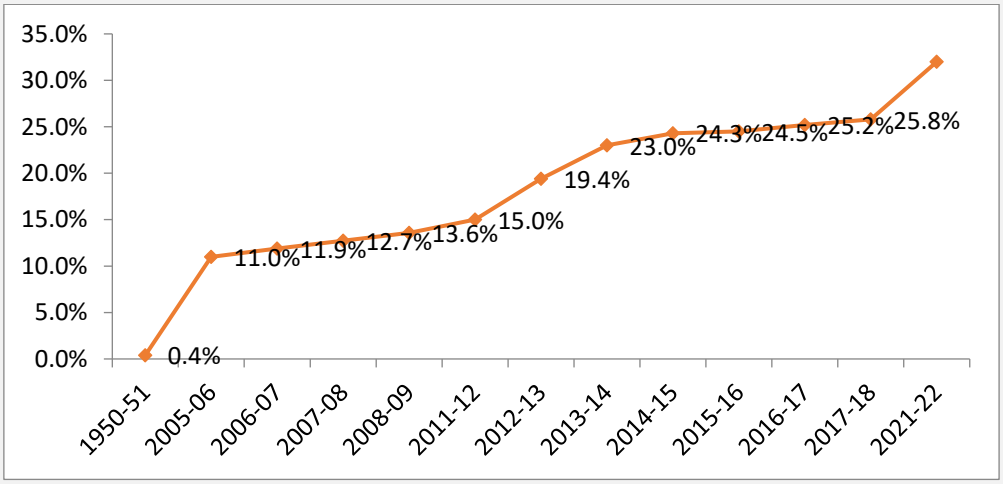
This project has been prepared based on the reports of these ten expert groups. Every initiative suggested has been reflected upon, debated, thought through, and finally has been converted into actionable initiatives for implementation. We have also suggested an implementation mechanism along with a funding system for efficient fund management. It is proposed that the initiatives would get into a pre-implementation stage from October 2019 and would be completed by 2024, after which there would be a comprehensive evaluation before taking these initiatives forward, either in the same shape or with due modifications.

Background

Higher education today

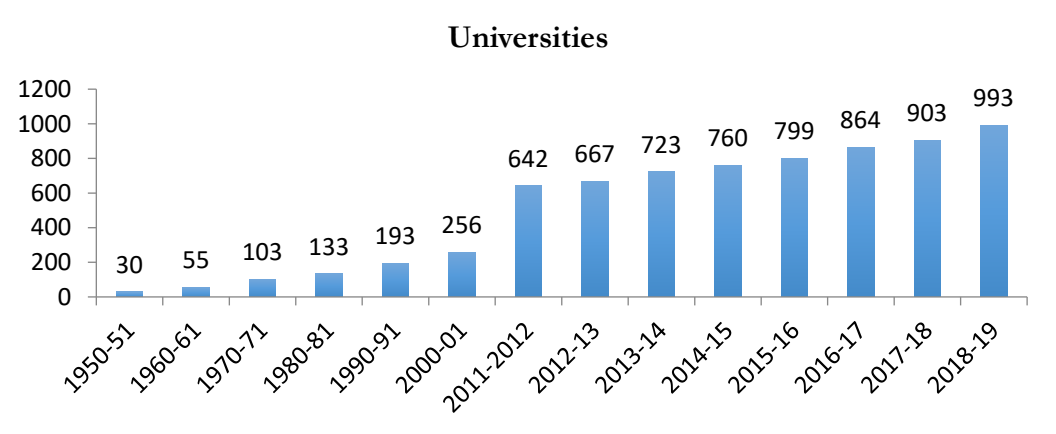
Over the years, significant progress has been made in higher education in the country. There is a perceptible shift in moving from an elite centric higher education system to more that recognizes issues of massification to enhance access and equity, but also conscious of promoting quality and excellence in leading higher education institutions of the country. The interventions over the last decade have seen significant progress in the GER, which is currently at 25.8% as against the world average GER of 27% as of 2018.

Figure 1: India's GER over time[1]

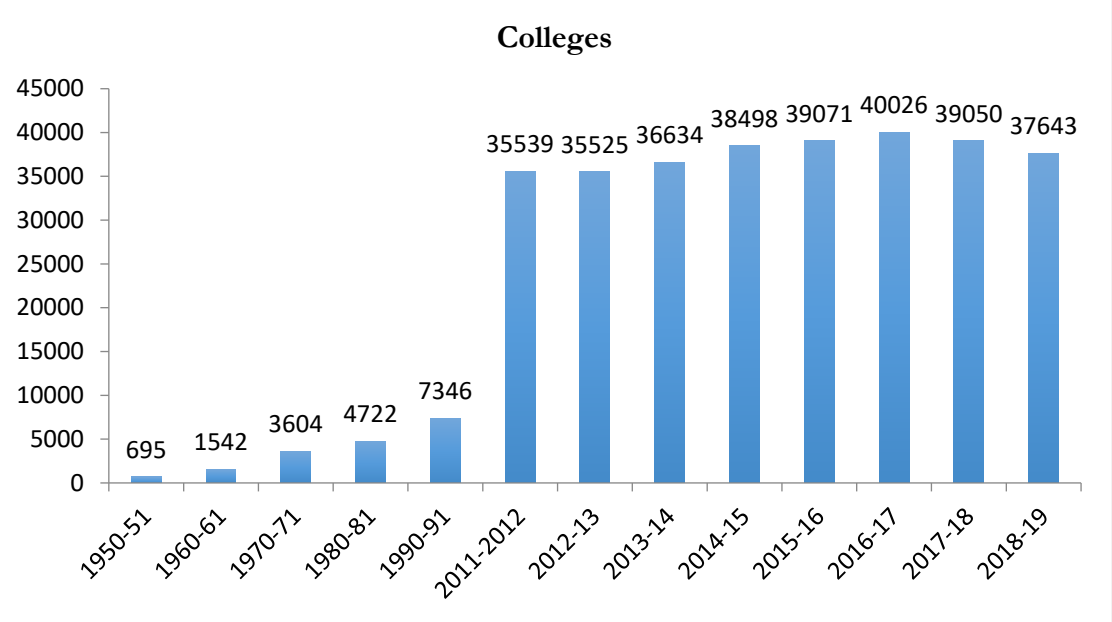


This increase in GER has, naturally, been accompanied by an increase in the number of higher education institutions serving the population. From 26 universities and 695 colleges at the time of independence, we have risen to 993 universities and 37,643 colleges today. This is a 40-fold and 57-fold increase in the number of universities and colleges, respectively. However, as the low GER very aptly indicates, increase in the number of institutions has remained inadequate to meet the increased demand for higher education.

Figure 2: Growth of universities and colleges in India



[1] Selected Education Statistics, MHRD



The question of GER and educating the youth has gained additional significance given the critical stage of development that our nation is going through. According to the International Labour Organisation (ILO) estimates, by 2020, India will have 116 million workers in the age group of 20-24 years as against 94 million in China[2] . In addition to this, the average age of Indian population by 2020 will be 29 while many developed countries will be in the early or late 40s. To take advantage of this demographic dividend (indeed, to prevent socio-economic complications arising out of a large unemployable young population), this massive workforce would need to be gainfully employed. This means that our country must have the foresight to create systems and capacities to educate and skill such as large numbers of people. Emphasis will also have to be laid on giving an education that supports and promotes employment generation, entrepreneurial spirit, and innovation as these are the factors that will help in creating enough sustainable job opportunities within India.

Figure 3: Average age in 2020[3]

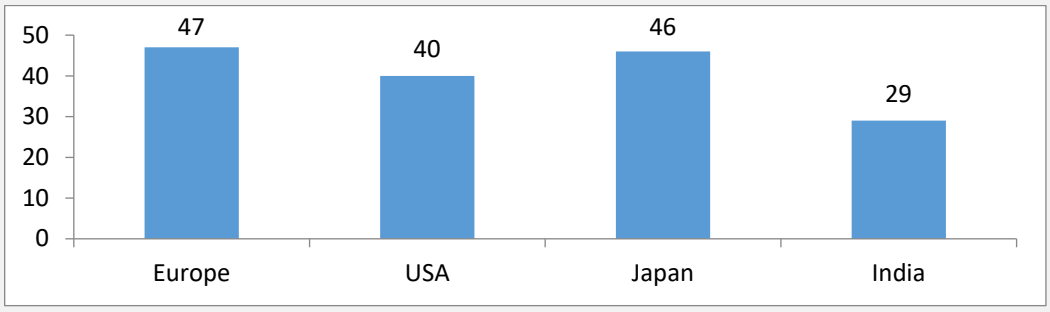


Figure 4 shows the population median projections for the various states in the country in 2026. Uttar Pradesh will be the youngest state in 2026, with a median age of 26.85 years. Bihar, Madhya Pradesh, Rajasthan, Chhattisgarh, etc., are other states which will have a relatively young population to deal with over the next decade. Naturally, these states need to be aware of the opportunity and the consequent responsibility that lies in having a large young working population. It would greatly benefit states to look at various strategies they will need to be employed in the future to train, educate, and employ these masses of young people and turn it to their advantage.

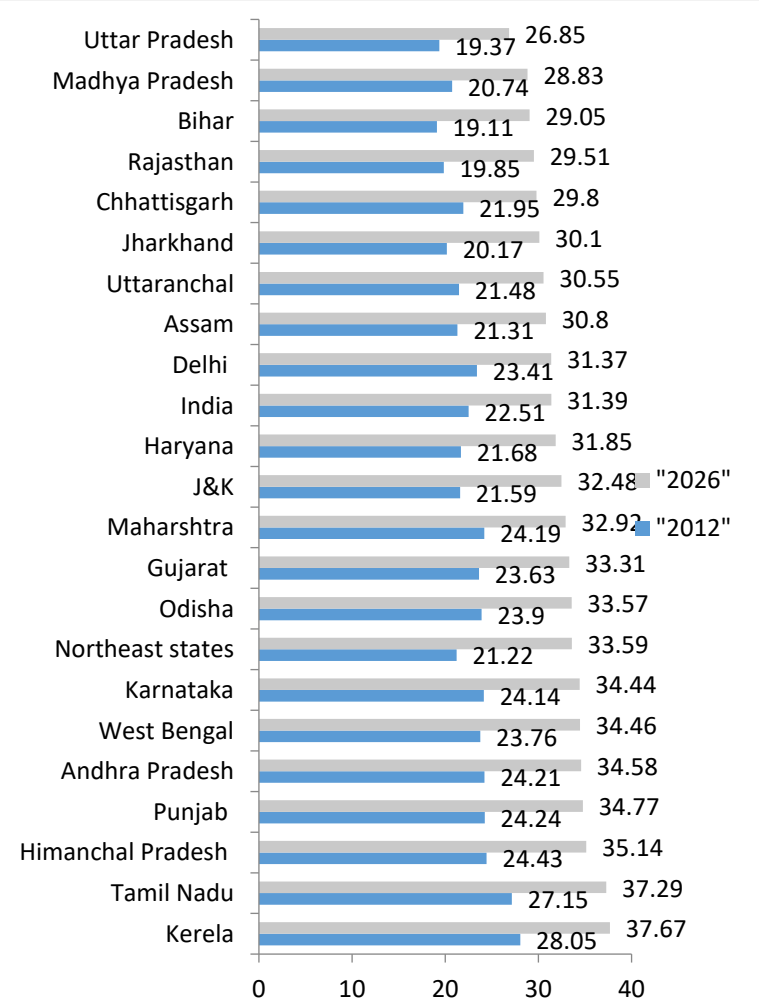
[2] http://laborsta.ilo.org/applv8/data/EAPEP/eapep_E.html as accessed on 7th November, 2011

[3] ILO Estimates and Projections of the Economically Active Population: 1990-2020 (Sixth Edition), October 2011

Apart from the creation of capacities at higher education level, much needs to be done in terms of bringing a larger number of students from senior secondary to higher education systems, overcoming geographical and socio-economic disparities while maintaining focus on quality.

The following sections take a critical look at the progress that Indian higher education has made in three dimensions: access, equity, and excellence.

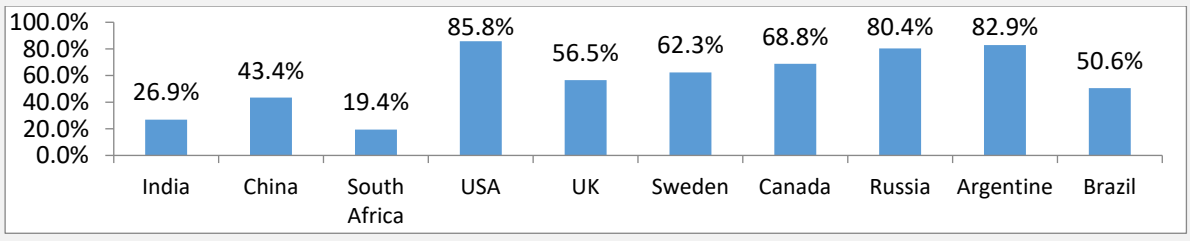
Figure 4: Median Age (yrs) – Population Projections for 2026 [4]



Access

Illustrated in Figure 5, India's GER is far below those of most developed countries and even below that of the other BRIC nations (Brazil, Russia, and China).

Figure 5: GER of selected countries[5]



[4] Report of the Technical Group on population Projections, Census 2001, May 2006

[5] The Global Competitiveness Report 2017-18

Access to higher education differs widely across states (Figure 6). The southern states have better GERs as well as higher availability of educational institutions. While most hilly region states have low institutional density, their GERs vary from high to low. This may be because higher education does not completely depend on the physical availability of institutions but also on other socio-economic factors such as the income of the parents, willingness to migrate, cultural factors, etc. States with high population density present a different picture. In Bihar, Jharkhand, Odisha, and Rajasthan, both the institutional density and GER are very low.

Figure 6 indicates a robust GER in many of the southern states with a notable inclusion of Maharashtra, Uttarakhand, and Hilly States such as Manipur, Sikkim, Himachal Pradesh, and J&K. Hilly states have performed well despite geographical constraints. This may be because many regions of these states have a strong culture of school education and high gender parity in society.

Among the notable underperformers are states from Central and Eastern India and states of Nagaland, Mizoram, Tripura, and Assam from the North-Eastern Region. It is pointing towards building capacities, strengthening school systems, and fundamental change in the attitude towards education that is required in these states. Clearly, there is a need for greater investment for improving access and equity in the states with GER below the national average.

Figure 6: GER by State: 2017-18

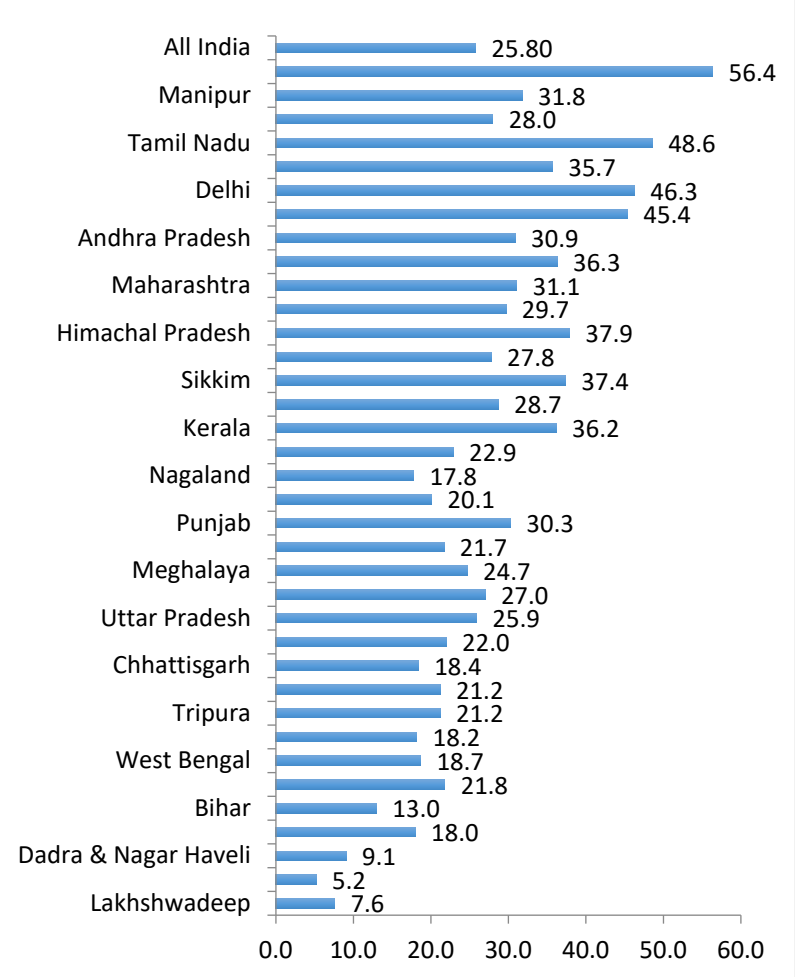
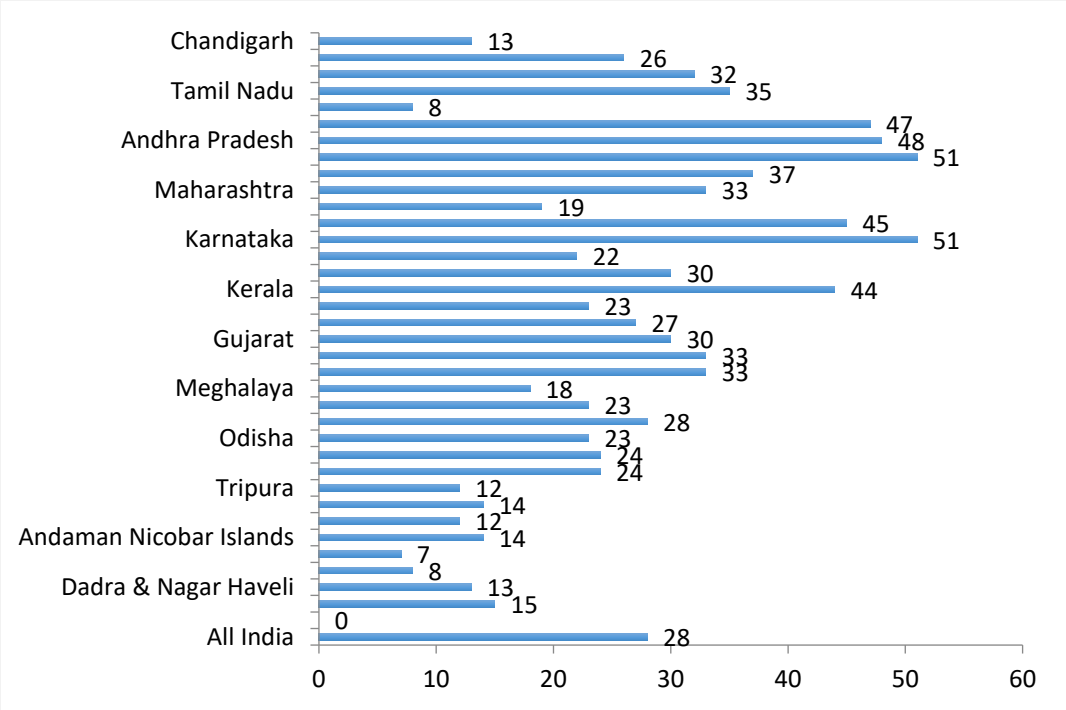


Figure 7 shows the institutional density across states. Again, southern states lead in institutional density, which has a co-relationship with high enrolment in their higher education institutions. Predictably, the hilly states and north-eastern states and states in central and eastern have lower

institutional density, though recent interventions through setting up Model Degree Colleges and their upgradation under RUSA have brought about substantial improvement in their institutional density. However, the need for increasing enrolment in already existing higher education institutions certainly needs a fresh impetus.

The higher institutional density in Karnataka, Tamil Nadu, Andhra Pradesh matches with the high GER is these states. The extremely high density of institutions in Puducherry, Chandigarh, and Delhi can, by the fact that these areas are educational hubs and attract many students as well as private investment in higher education.

Figure 7: Institutional density by State



The distribution of universities across states has increased over time, therefore, showing that higher education has become more accessible to the masses over the years and has even penetrated to areas which earlier may not have had a very large count of universities. Even though there has been an increased number of universities, much needs to be done in terms of generating more awareness about the importance of higher education, as it is the only way that the human resources in our country will advance. The question of access and the number of higher education institutions cannot be seen only from the narrow point of view of the government's involvement. More than half of the students enrolled in higher education today are under private educational institutions.

Having discussed the various aspects of access, it is important to note that a high GER does not depend solely on the attributes of the higher education system in the country but also on the quality and output of the school system. Higher education institutions receive only a limited pool of students from the school education system. Economic considerations, cultural factors, low performance, etc. often force many students to drop out of schools after the primary and secondary levels in India. However, this situation is improving rapidly. The success of Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and the consequent improvement in transition rates is going to increase the number of students that will opt for higher education and thus, it makes a strong case for enhancement of financial support for

expansion, upgradation and quality improvement of higher education system. Such enhancement can bring about balanced growth of new institutions, based on spatial and need-based planning. This, in turn, can help absorb the ever-increasing number of students completing the higher secondary level.

Equity

Equal access to opportunities is another important element of EQUIP. Available data indicates the improvement in access to higher education by socio-economic and gender categories over the last five years.

Figure 8: GER across categories[6]

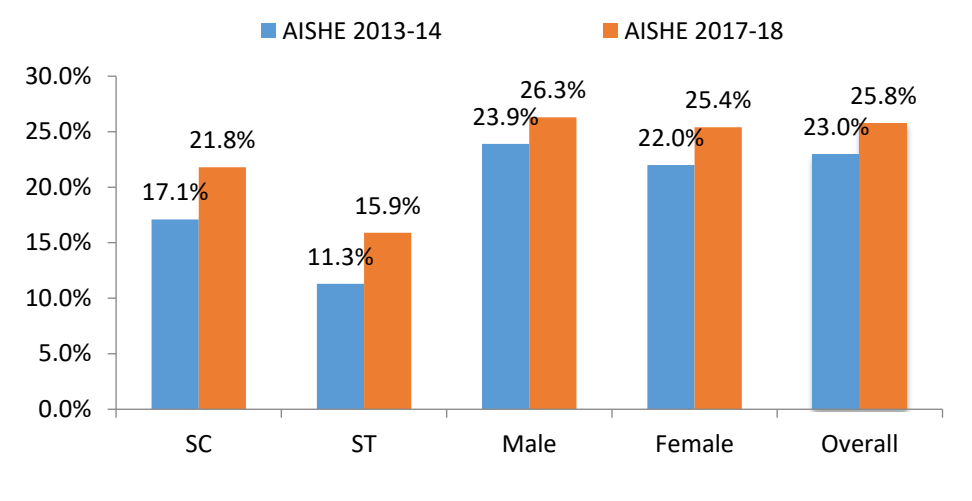


Figure 8 indicates the significant improvement by socioeconomic categories (SC, STs) and gender groups in improved educational attainment, but they still lag behind the national averages. However, much more needs to be done to reduce inter-state disparities amongst social groups and improve their GER.

For female students as well as students from disadvantaged backgrounds, the lack of financial resources and challenging social conditions are the primary concerns in accessing higher education. Scholarships for such students, financial assistance throughout higher education, creation of hostels and peer-group support are some of the basic steps that can be taken to bring them into the fold of higher education.

Excellence

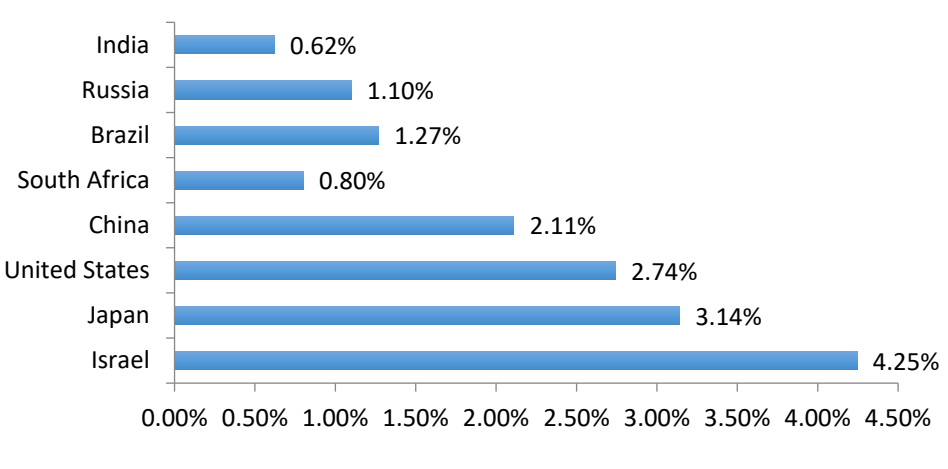
As per the QS Rankings 2020, nine institutions have featured in Top 500 rankings, i.e., IIT Bombay (152), IIT Delhi (182), IISc Bengaluru (184), IIT Madras (271), IIT Kharagpur (281), IIT Kanpur (291), IIT Roorkee (383), Delhi University (474) and IIT Guwahati (491).

Research, Internationalisation, better Perception are areas where universities in the developed countries have the edge over their Indian counterparts. Investment in R&D in developed countries is not limited to public funding; funding from the private sector (especially industry) is equally essential. This has helped universities and industries in such countries maintain their competitive edge. An analysis (Fig 9) of Gross Domestic Expenditure on research and Development (GERD) as a percentage of GDP shows that countries like the USA (2.74%),

[6] AISHE 2017-18 Data

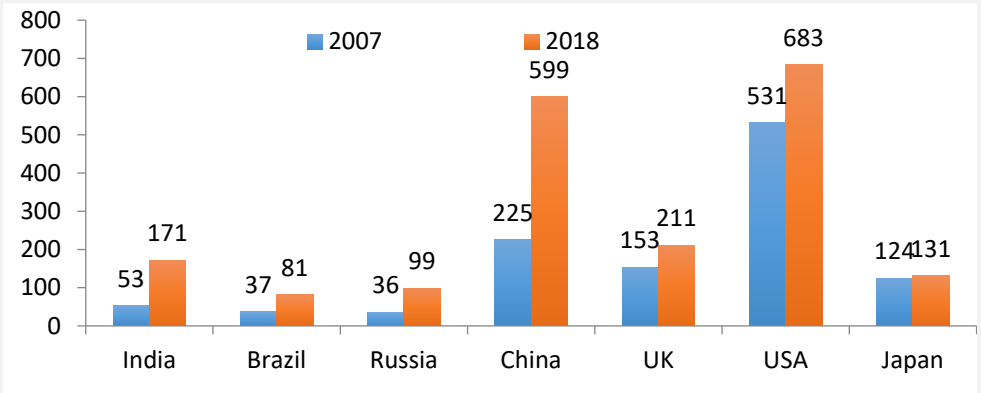
Japan (3.14%) and China (2.11%) have invested far more than India (0.62%), and the universities in these countries naturally far better in the global rankings.

Figure 9: GERD as Percentage of GDP UNESCO Institute for Statistics -2016; India & South Africa data from 2015 [7]



At its present stage of growth, India and other developing nations require knowledge-based value-added development of areas like pharmaceuticals, biotechnology, Nanoscience, healthcare, genetics, IT, etc. Intensification and expansion of research-oriented higher education in the university system is the way forward. Such escalation would be possible through the infusion of massive public investments that would ensure quality and help a more significant number of aspiring universities to excel instead of remaining limited to relatively small and specialised research-oriented institutions. The survey conducted by the National Science and Technology Management Information System (NSTMIS) under the Department of Science and Technology (DST), has shown that the per capita R&D expenditure increased to Rs 659 in 2014-2015 from Rs 217 in 2004-2005, and it was driven mainly by the government. The central government accounted for 45.1%, state governments for 7.4%, public sector industries for 5.5%, and institutions of higher education for 3.9%. The private sector accounted for the remaining 38.1%.

Figure 10: World publications of selected countries (in 000's) [8]

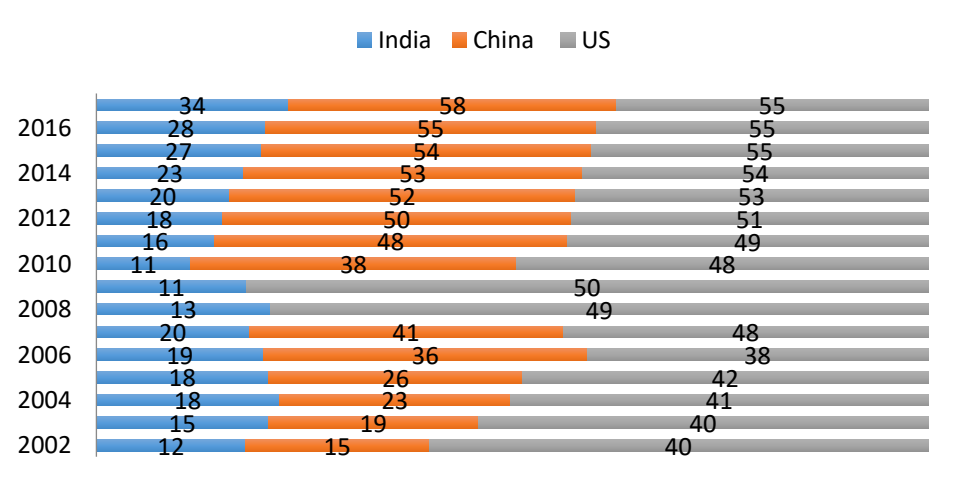


[7] UNESCO Institute for Statistics

[8] SCOPUS Indexed Journals

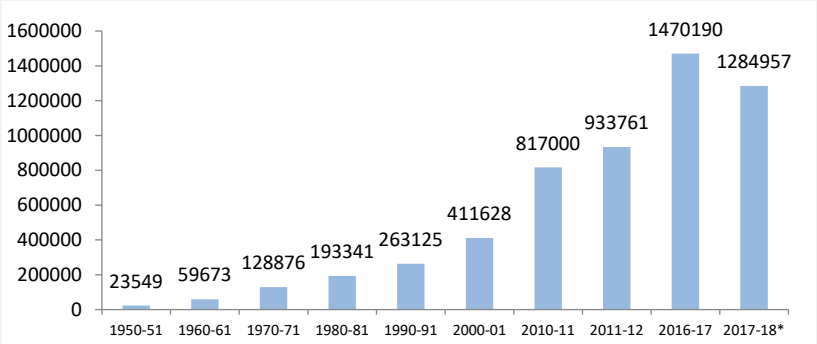
Research produces new knowledge; publications are one of the tangible measures of research activity that have been broadly available for international comparison. India ranks 5th in global research publication output as per Scimago Journal Rankings, where countries such as USA, China, Germany, and the UK dominate both in terms of quantitative and qualitative research. The US emerges in the top (683,000), with China (599,000) and UK (211,710) respectively in 2nd and 3rd place. The R&D spending, research output in recent years has grown more rapidly in China, and its publication output nearly doubled since 2007, and as a result, China's output is now almost comparable to that of the United States.

Figure 11: Number of PhDs (in 000s)



The number of doctoral degrees produced is an indication of the emphasis of an educational system on research and in the creation of new knowledge. As per available figures (Figure 11), China now produces the maximum number of PhD's globally, having steadily increased the numbers yearly over the United States. In India, according to figures available with AISHE for the year 2017-18, 34,400 students were awarded PhD level degree during 2017. However, the ever increasing numbers of PhD Candidates across the world also raise questions on whether the intention to increase the number of PhD graduates will be at the expense of their quality. One consequence of increasing numbers of PhD graduates is that job opportunity available and the remuneration these opportunities provide do not always appear commensurate with the increasing numbers. Additionally, the number of qualified faculty needed to supervise doctoral programs also needs to increase.

Figure 12: Growth of Teaching Staff in Universities and Colleges[9]

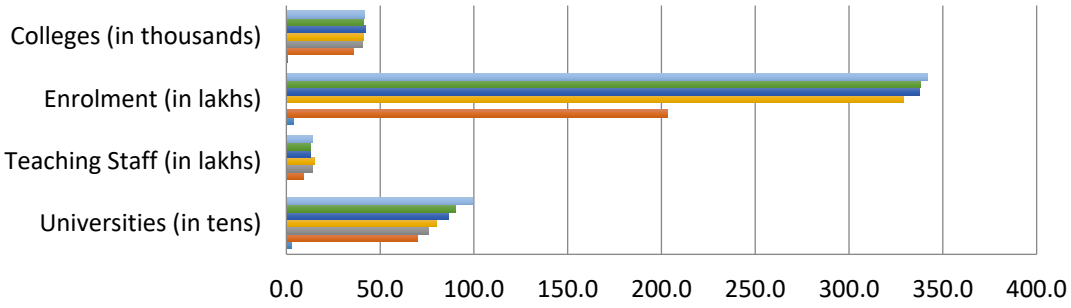


Note*: In the All India Survey of Higher Education (AISHE 2017-18) first-time detailed information about individual teachers was obtained. The total number of teachers giving information through Teacher Information Format (TIF). UGC used these figures for the total teacher strength in Universities and Colleges in 2017-18.

[9] University Grants Commission, Annual Reports

At all India level, there were 72 female teachers per 100 Male teachers. Similarly, in SC Category, there were 56 female teachers per hundred male teachers, and in the case of ST and OBC, it was 66 and 68 female per 100 male teachers, respectively.

Figure 13: Growth of Higher Education: Universities/Colleges/Students enrolment/Teaching Staff: 1950-51- 2017-18

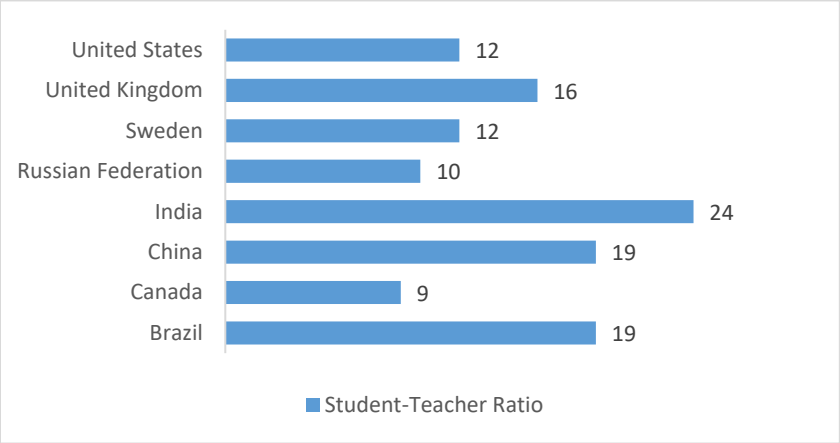


	Universities (in tens)	Teaching Staff (in lakhs)	Enrolment (in lakhs)	Colleges (in thousands)
2017-18	99.3	13.67	341.86	41.9
2016-17	90.3	12.84	338.15	40.97
2015-16	86.4	12.68	337.28	42.32
2014-15	79.9	14.76	328.94	41.37
2013-14	76	14.19		40.76
2012-13	70.0	9.3	203.3	35.5
1950-51	3.0	0.2	4.0	0.7

Academicians play a leading role in conducting academic research, apart from teaching duties. However, India is short of professors, with 6,600 posts vacant in central universities, a shortfall of 33%. In IITs and State Universities, 35% and 38% vacancies need to be filled respectively. Vacancies have negatively impacted the quality of teaching and research. Available data shows that this shortfall in faculty is being bridged by using large numbers of ad hoc or part-time faculty. However, institutions with a high number of ad hoc or part-time faculty perform poorly in terms of teaching quality. Faculty shortages have worsened over time, with growth in the number of colleges and universities, and increasing enrolment rate of students. The number of colleges in the country has increased from 7346 in 1990-91, to 41,900 in 2018-19, this has been five times increase in 30 years. With the GER increasing annually, low faculty recruitment will affect the quality of teaching and functioning of Indian colleges shortly.

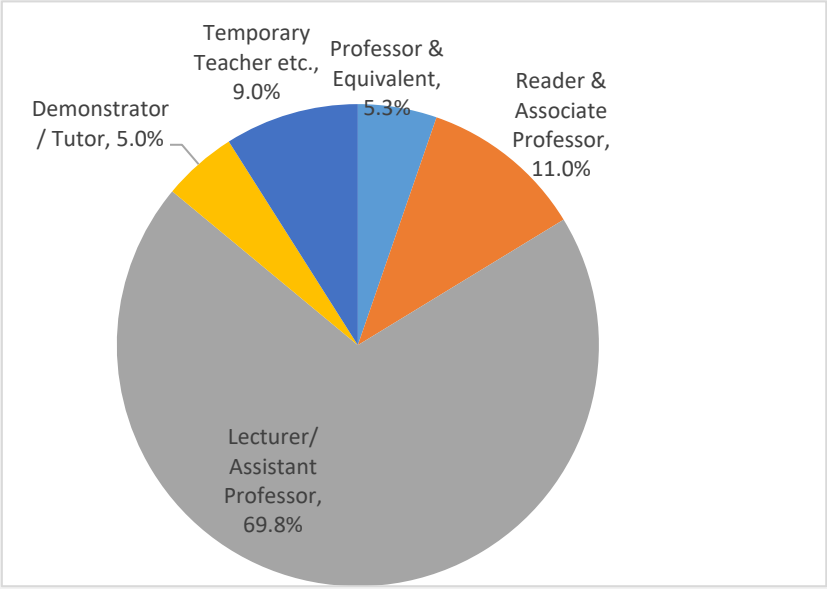
The direct impact of increasing student numbers and slow growth in the faculty numbers is seen on the student-teacher ratios. Below figure highlights the student-teacher ratios in selected countries. The student-teacher ratio in India (24:1) is meagre as compared to other countries 19:1 in China; and 12:1 in the United States. A low student-teacher ratio indicates the burden on a single teacher of teaching multiple students as well as the lack of time that each student gets. Apart from this simplistic effect, in an institution of higher learning, a smaller number of and overburdened teachers are also unable to pursue any research or encourage their students to do so. Consequently, the culture of questioning and reasoning cannot be inculcated as a part of higher education in most institution

Figure 14: Student-teacher ratio is selected countries[10]



There are multiple reasons for low student-teacher ratios. Even though the student intake of colleges and universities has increased over time, due to the fear of taking up an almost life-long financial burden of paying the faculty, most institutions hesitate in creating new faculty positions. In addition to the low number of sanctioned faculty positions, faculty vacancy even in sanctioned strength is an extremely serious problem. Due to various reasons such as a ban on recruitment, lack of funds, and the reluctance of states to bear the long-term salary burden, a large number of faculty positions are not filled. Attracting faculty is a big challenge for rural and backward areas because of the lack of infrastructural support and reluctance of teachers in moving to non-urban areas.

Figure 15: Level-wise teaching staff[11]



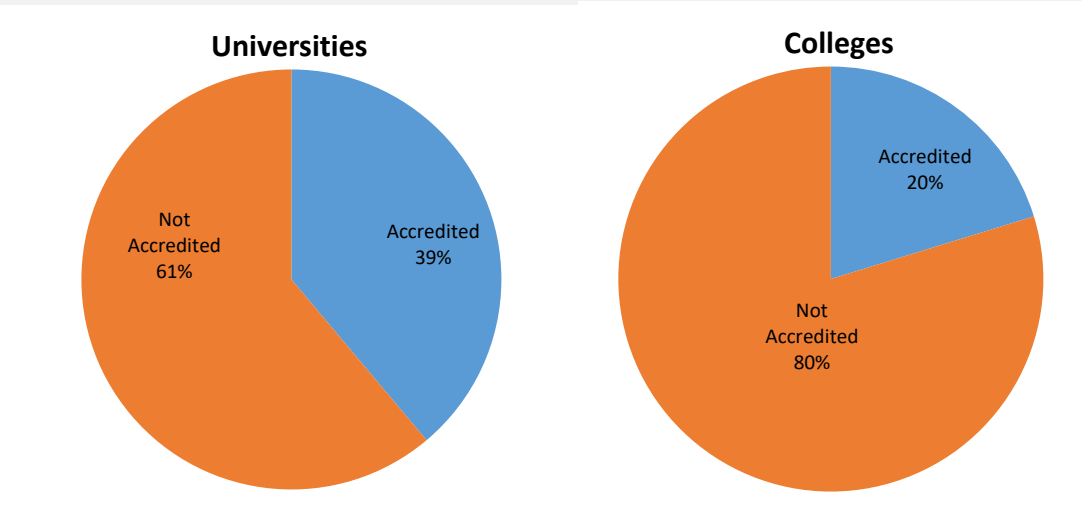
One of the best ways of ensuring quality in higher education is the system of **accreditation**, whereby, a central body or multiple bodies of repute accredit an institution's academic rigour and other aspects. Internationally, this system works well as the accreditation is carried on by diverse peer groups of academicians. Thus it is fair and acceptable. Accreditation is seen as a necessity for both self-reflection and also showcasing institutional strength. Therefore, the

[10] UNESCO Institute of Statistics

[11] AISHE 2017-18

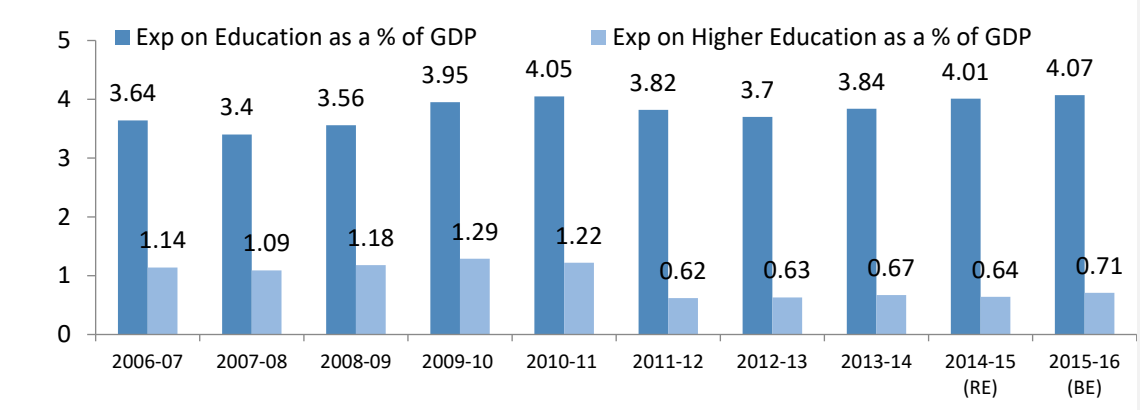
presence of one or many Independent quality assurance mechanisms is a sine qua non for quality and excellence. Unfortunately, in India, the accreditation of higher education institutions and programs is optional and has not yet caught up as a trend. While institutional accreditation through the National Assessment and Accreditation Council (NAAC) and program accreditation through the National Board of Accreditation (NBA) has gained momentum, only 39% of all universities and 20% of eligible colleges have been accredited so far.

Figure 16: Proportion of Universities and Colleges accredited by NAAC



A concerted effort is needed to ensure that quality informs every process in higher education. Any new scheme planned by the government must ensure that accreditation becomes mandatory and sufficient incentives and disincentives are built into the system to ensure that every higher education institution obtains accreditation. More importantly, there needs to be a debate at every level in the system, about the quality of higher education that we are providing.

Figure 17: Expenditure on Education in India (As % of GDP)



The public investment in education as a percentage of GDP has remained almost stagnant in the last ten years. The more worrying aspect is that **public investment in Higher education has declined as a percentage of GDP from 1.14% in 2006-07 to 0.71% in 2016-17**. Higher education is widely recognised as a public good or at least as a quasi-public good as it produces a broad set of economic, social, cultural, demographic, and political externalities. The government has now recognised post-elementary education as a Merit-2 good (elementary education is recognized as a Merit-1 good), that needs to be financed considerably by the state. Therefore, higher education cannot be a 'non-priority area' anymore, and higher education institutions cannot be treated as if they are a part of the non-essential sector.

Country Name	Public expenditure on education as % of GDP
Brazil	6.24
South Africa	6.13
Australia	5.32
World	4.81
India	4.38
China	4.26

Source: World Bank database for the first available year. For China, derived from publicly available data

While international comparisons have their limitations, they nevertheless provide some broad indications on the relative positions of a country in comparison to others. The above table shows that India would need to increase its expenditure on education appreciably if it has to play the geopolitical role that it wants to assume.

In a globally competitive era, Indian higher education institutions currently face enormous and rapidly mounting challenges. While higher education institutions are typically complex enterprises, they are especially complex in India, given the scale, size, and nature of the higher education ecosystem. The management of these higher education institutions requires deep and active understanding, knowledge, skills, experience, and strategic planning. Higher education in India has undergone significant changes and rapid expansion over the last six decades. This sector has seen the rise of a diverse set of institutions both in public and the private space. While development is welcome in the sense of increased access and equity, quality and excellence must now occupy the central attention of policy planners. Also, given the fact that higher education plays a pivotal role in the construction of knowledge societies, it is essential to focus on fundamental issues concerning quality teaching, learning, curriculum, research, and related activities.

Executive Summary

I. BACKGROUND

The principles of access and inclusion have been central to India's higher education policy. In recent times, several initiatives of the Government of India have been geared towards enhancing quality, putting a premium on excellence, and providing a major thrust to enhancing employability. Several new initiatives of the Government such as Rashtriya Uchchatar Shiksha Abhiyan (RUSA), Global Initiative of Academic Network (GIAN), Scheme for Promotion of Academic Research Collaboration (SPARC), Impactful Policy Research in Social Science (IMPRESS), Institutions of Eminence (IOE), etc. have played a major role in advancing access, equity, quality, and excellence in the Indian higher education system and institutions.

Shifts in policy priorities in the sector are linked and attributed to a constantly evolving ecosystem demanding targeted interventions at different points in time. Higher education has a primary role to play in building a knowledge-based economy, providing sustainable employment opportunities, and ensuring a better standard of living to the existing and upcoming generations. While numerous vertical programs have advanced progress in the sector, a broad-based yet targeted and action-oriented intervention is imperative to prepare the higher education system to cater to demands for quality and accessible education, and the demand for employability arising out of the current dynamism in the Industry and Economy.

EQUIP, an overarching program has been conceived by the Department of Higher Education, Ministry of Human Resource Development which sets out to deliver further on the principles of access, inclusion, quality, excellence, and enhancing employability in higher education. EQUIP aims at ushering transformations in India's higher education system by implementing strategic interventions in the sector over five years (2019 – 2024). Ten expert groups have been constituted to design and formulate an Action Plan on Higher Education titled Education Quality Upgradation and Inclusion Program (EQUIP) encompassing ten critical areas of Indian higher education.

II. OBJECTIVES

The EQUIP exercise has set the following objectives to be achieved in a period of 5 years:

1. Double the Gross Enrolment Ratio (GER) in higher education and resolve the geographically and socially skewed access to higher education institutions in India
2. Upgrade the quality of education to global standards
3. Position at least 50 Indian institutions among the top-1000 global universities
4. Introduce governance reforms in higher education
5. Accreditation of all institutions as an assurance of quality
6. Promote Research & Innovation ecosystems
7. Double the employability of the students passing out of higher education
8. Harness education technology for expanding the reach
9. Promote India as a study destination
10. Achieve a quantum increase in investment in higher education

III. MAJOR CHALLENGES IDENTIFIED

4.1. Disparities in access to higher education and lack of adequate academic support to vulnerable student communities: Empirical evidence points towards the persistence of economic, social, locational, and regional disparities in access to higher education. The higher education system and institutions have to recognise and adapt to meet the demands from diverse communities of students.

4.2. The inability of students to achieve desired learning outcomes and incapacity of teachers to deliver on credible teaching outcomes: Deficiency of prerequisites amongst students to take up programs and the subsequent failure to achieve desired outcomes is much prevalent. Limited opportunities for induction and training of teacher render them incapable of delivering on desired teaching outcomes.

4.3. Lack of global standards of excellence in Indian higher education Institutions: This has a direct impact on India's capacity to reap its demographic dividend and acts as an impediment for HEIs to feature in top global rankings of institutions.

4.4. Inadequate compliance by higher education institutions and stakeholders in implementing reforms and regulations to ensure efficiency and transparency: A stark manifestation of this is the lack of autonomy of high performing institutions to independently tread the path of quality and the opaque mechanism adopted by Universities in selecting VCs/Deans/Registrars/FOs

4.5. Lack of adequate capacity of existing accreditation bodies to ensure participation of all higher education institutions in the accreditation process: NAAC and NBA are currently reeling under the issue of inadequate capacity to bring all HEIs into the accreditation framework.

4.6. Absence of overarching funding body to promote research and innovation: This has led to a lack of adequate funding in research and innovation, and a low quantity of quality research output.

4.7. Absence of convergence between higher education and the skill ecosystem: Higher education contributes only 4% in offering skill training while MSDE contributes 58%. The MSDE hasn't been involved in the higher education system either.

4.8. Lack of quality and practical learning through MOOCs: Learning through MOOCs is currently a unilateral process whereby the learning is dependent entirely on the quality of time and effort invested by an individual learner during a MOOC. There are also issues of building the components of skills and practice through MOOCs.

4.9. Limited initiatives were undertaken to attract students from abroad and internationally promote the excellence displayed by Indian HEIs: India ranks third in the world in terms of having students pursuing higher education from abroad. However, globally, India occupies the 26th position amongst the top destinations for international student mobility.

4.10. Inadequate investments in higher education as a proportion to the GDP: Government's expenditure on higher education is a mere 2.7% of the GDP as against the recommended 6% by the Kothari Commission.

IV. STRATEGIES AND INITIATIVES

The following strategies and initiatives have been arrived at by the respective expert groups after several rounds of intense discussions and deliberations concentrating on the issues at hand and the possible interventions to address them. The designed strategies and initiatives were further refined by the groups based on the suggestions and recommendations received during the Higher Education Policy Retreat 2019 to make them more viable, optimal, effective, and sustainable.

1. Strategies for Expanding Access

1.1. Enhance access to vulnerable communities (SC/ST)

a) **Setting up of Samras Hostels in underserved areas**: 8000 samras hostels (in Build-Own-Operate model) would be set up to accommodate 16 lakh students from vulnerable socio-economic backgrounds with no access to higher education institutions in their vicinity to continue education. Scholarships for 16 lakh students to meet hostel expense will act as a support mechanism for students.

b) **Fee reimbursements for SC/ST students:** 50% fee waivers for ST/SC students pursuing education through ODL and disbursal of balance in the event of successful completion of the respective academic year.

c) **Finishing School/Bridge Course to impart employable skills:** Model degree colleges and new colleges set up in backward areas to have the provision of a bridge course (on the same pattern as finishing school) in the first year of the degree to impart mathematical and soft skills to them to enhance employability.

1.2. Expand access to cater to geographically underserved areas

a) **Enhance learnability and employability through vocationalisation**: Upgrade 500-degree colleges in backward blocks to vocational degree college (VCD) by integrating a vocational stream to start B.Voc programs

b) **Broadening opportunities for access to higher education through MOOCs:** Develop quality blended MOOCs to overcome the challenge of faculty deficit in institutions and to facilitate blended learning in vocational courses (with 3000 additional blended MOOCs).

1.3. Improve the Gross Enrolment Ratio (GER) through Open and Distance Learning (ODL):

a) **Double the number of Learner Support Centres**: Additional 5000 Learner Support Centres to be established to cater to 60 Lakh additional students.

b) **Upgrade ICT infrastructure of IGNOU**: ICT infrastructure, especially EMPC of IGNOU to be upgraded and also in the 56 regional centres and other SOUs

c) **Offer Courses through multiple languages:** IGNOU in collaboration with the State Open Universities and its regional centres located in the concerned states can facilitate the conversion of study materials into regional languages.

1.4. Enhance overall access to higher education[12]:

a) **Offer incentives to students for pursuing higher education**: Students need to be incentivized with opportunities to earn while studying for higher education to appeal to them. Local colleges can act as extension centres for specialized technical/vocational services, and the students could get avenues to earn in these centres

b) **Offer courses in a dual mode in universities**: Universities may be encouraged to offer courses in dual modes and the examinations held for both Distance and Regular modes should be conducted as the same.

2. Towards Global Best Teaching/Learning Processes

2.1. Establish mechanisms for revision/renewal of curriculum, and the introduction of effective pedagogies and assessment practices:

[12] Initiative not reflected in the sheet of financials for the respective thrust area

a) **Formulate National Higher Education Qualifications Framework** (NHEQF) and revise Learning Outcome-based Curriculum Framework (LOCF) in 100 courses
b) **Introduce new programs with effective pedagogies**: Introduce flexible Bachelor's Degree programs with multiple exit and re-entry, Bachelors Liberal Arts education and Multi & Cross-disciplinary departments in HEIs to cover 200 Universities and 10,500 colleges. Introduce Student Induction Program and Bridge Courses in all Under Graduate Programs of 2/4 credits (in 1200 institutions)
c) **Formulate guidelines for renewal/revision of curriculum**: Create institutional mechanisms for periodic review/revision of curricula by formulating guidelines for implementation of the revised curriculum, integral to accreditation and ranking, to cover 200 Universities and 1000 colleges during 2019-2024. Prepare guidelines for a mandatory four months internship and community engagement and roll it out in all UG programs

2.2. Capacity Building and continuous professional development of faculty

a) **One-time financial grant to support filling up of vacancies:** One-time catch up grant to every institution for a period of 5 years for filling up vacancies of full-time faculty and inducting adjunct and visiting faculty
b) **Faculty Induction Program**: Organise Faculty Induction Programs for newly recruited Assistant Professors (in the last 5-6 years) in 400 identified institutions under UGC & MHRD.
c) **Develop a strategy for continuous capacity development of faculty**: Organise refresher training programs for continuous professional development of faculty and leadership development programs on the lines of Leadership for Academicians Program (LEAP). Develop professional standards for faculty in HEIs covering 100 disciplines @ Rs.10 lakh per discipline and revise existing career path with tenure track leading up to leadership roles. Creating a Pool of 1000 Pedagogic Experts with three weeks of foreign training @ 20 lakh per faculty.
d) **Infuse professionalism and enable faculty to develop and utilize multiple pedagogical and assessment approaches**: Establish 100 new Centres of Excellence/Teaching-Learning Centres under National Mission on Teachers & Teaching and a National Academy.
e) **Student Satisfaction Survey**: Undertaking periodical student satisfaction survey by NAAC Accredited 2.0 and above Institutions
f) Introduce a **National Tutor's Program**

2.3. Upgrade academic infrastructure and cultivate technology-enabled learning ecosystems

a) Assess the adequacy of infrastructure and academic facilities: Obtain and collate information from State Governments regarding several bottoms of the pyramid Universities (150) & unaccredited colleges (5000) in each State/UT to assess the adequacy of infrastructure and academic facilities available in HEIs.
b) Provide Support with a One-time Catch-up Grants to facilitate infrastructural upgradation: Fund 100 universities in States with Low GER (less than the national average) with a one-time grant of Rs. 50 Crores per University and Rs 10 Crore per college.[13]
c) Mentorship of neighbouring HEIs: Identify Mentor institutions and implement mentoring activities

2.4. Periodic Monitoring and Evaluation:

[13] Included as per the particular mentioned in the final sheet of financials allocated to the given area

Set up a task force to monitor implementation of initiatives over the period of five years, conduct yearly Joint Review Missions, organise yearly review meetings involving all state-level stakeholders, develop a portal for dynamic review, etc.

3. Towards Excellence

3.1. **Institutions/Universities with top 1000 Global Rankings: (50)** HEIs will be assisted to reach top 1000 of world rankings

3.2. **Set global standards to ensure quality**: This applies to infrastructure, academics, research, amenities, industry connect, and innovation & entrepreneurship.

3.3. **Ensure International Quality Outcomes**: This is to be accomplished by initiating global Collaborations, Programs and Projects, making an Off-shore Footprint, fostering Innovation and Industry

3.4. **Amend regulations for greater autonomy**: Enable institutions through Modification of Rules and Regulations for more autonomy and flexibility

3.5. **Build a Circular Ecosystem for Promotion of Excellence**: This is to be achieved through new Instruments and incentives

3.6. Management through the definition of metrics, indices, payback along with national and global mentoring /facilitation schemes for achieving goals

3.7. **Expand the catchment area of receiving funds**: Enhance funding and incentives to enable achievement of targets and widen the catchment area of funding beyond the government sources.

3.8. **Enhance the national reputation of institutions**: This is to be achieved about stakeholders, by enhancing visibility with Students, and by enabling Global Collaborations

3.9. **Delineate a Target Group:** Special autonomy would be offered to a catchment of 40-50 institutions to drive institutional excellence of global standards.

3.10. **Top 500 Global Ranking Institutions:** HEIs which are in top 500 of any of the three world rankings (QS, THE, Shanghai) are proposed to be a part of this catchment[14].

3.11. **Institutions in NIRF, NAAC and University with Potential for Excellence:** Institutions that figure in any two of the lists of top 40 of overall NIRF Rankings, has a NAAC accreditation score of 3.51 and above and appear in the UPE list of UGC shall be considered part of this catchment.

4. Governance Reforms

4.1. **Improve sectoral governance by the Government and the Regulatory Bodies**

a) **Model State Public University Act:** A model State Public University Act may be developed, which may not be made mandatory but serve as a model for the State Governments to emulate. It may contain the greater participation of State Councils of Higher Education in managing State Universities, define roles and the constitution of various bodies along with the qualification and process of selection of Vice Chancellors, faculty and administrators, etc. States will adopt the act if its implementation is linked to funds.

b) **Affiliation norms**: The number of affiliated colleges with the University shall be a maximum of 100, and the existing universities with a higher number of affiliated colleges shall be divided into several universities to ensure that the number of colleges with each university does not exceed 100. The other option is to have a

[14] Category included as per particulars in the final sheet of financials

separate vertical in the University, headed by the Pro Vice-Chancellor to deal with the University and affiliated colleges.

c) **Revisiting the affiliation system:** The affiliation system may be revisited whereby it shall be ensured that within two years of granting affiliation by a University, the college must be included under Section 2 (f) of the UGC Act. The affiliation by the University after seven years shall continue only if an accreditation agency notified by UGC accredits the college[15].

d) **Establishment of new Universities:** New universities are to be established only based on felt needs.

e) **Increasing the pool of autonomous colleges:** The College shall be encouraged to become autonomous colleges, and the UGC Act may be amended to give degree-awarding powers to good autonomous colleges.

f) **Mentoring of Colleges:** Autonomous Colleges to mentor potential colleges to move towards autonomy. Mentoring by NAAC high rating universities and NAAC high rating colleges or universities and colleges which are not yet accredited by NAAC may be undertaken at the earliest to ensure quality.

g) **Greater Participation of SHECs in managing HEIs:** The role of State Councils of Higher Education shall be enhanced, and they should act as a buffer institution between the Central Government - State Government - State Universities – Colleges in the State[16].

4.2. Improve Internal Governance in institutions

a) Developing an ERP for greater transparency: A generic ERP may be developed centrally for State Public Universities for smooth flow of information amongst the university administration, student staff, and public at large leading to enhanced quality of internal functioning.

b) Establishment of Human Resource Management Cell: Every university to begin with and every college at a later stage shall establish a Human Resource Management Cell for recruitment retention and development of academic as well as non-academic staff, a process which is common in all foreign universities

c) Standard Operating Procedure for State Universities: Standard Operating Procedures shall be notified for transparent functioning of universities.17

d) Transparent Selection of Administrators: The appointment of Vice-Chancellors/Deans/Registrars/FOs shall be done in a merit-driven and transparent manner.

e) Continuous capacity development of HE administrators: Continuous Leadership Development Programs may be arranged for Vice-Chancellors, along with for Registrars, FOs and Controller of Examination. Non-academic staff to be trained to improve professional management of higher education.

f) Formulation of Grievance Redressal System: The UGC has formulated regulation for Grievance Redressal of students. On the same pattern, the regulations for Redressal of Grievance for faculty and non-teaching staff may also be formulated.

5. <u>Assessment, Accreditation and Ranking Systems</u>

5.1. Broaden the accreditation framework

[15] Not reflected in the final sheet of financials
[16] Not reflected in the final sheet of financials
[17] Not reflected in the final sheet of financials

Widen the accreditation network and acknowledge the diversity of standards during the assessment. To ensure 80% of HEIs are brought into the net of quality assurance by 2024

5.2. Categorize institution into different levels of quality

Identify and certify institutions at Different Levels of Quality and bring them into the fold of the accreditation framework.

Categorize institutions/programs into four levels as follows:

Level 1: (A1: Highest Accredited Level: ≥ 3.26 (NAAC), six years of accreditation (NBA))

Level 2: (A2: Next Accredited Level: 3.26 (NAAC), 3 years accreditation (NBA))

Level 3: (AC1: Accreditation Candidate Level 1: Meets pre-qualifiers for A2/A1, but not accredited)

Level 4: (AC2: Accreditation Candidate Level 2: Falls short of pre-qualifies but exceeds other specified benchmarks).

5.3. *Establish a Mentoring System for Non-accredited HEIs*

a) Institutions at the top levels are expected to self-mentor and continuously improve their standards. Those at lower levels would require support to lift themselves. A Model for moving up the value chain is to be designed. HEIs identified at levels AC1, and AC2 should be initiated into Mentoring Programs designed for them.

b) Set up a National Mission on Mentoring in partnership with all accreditation agencies, top institutions in A1 and A2 categories, and a network of eminent retired Professors, Scientists, and Industry experts. It should closely coordinate with the National and Regional Benchmarking Agencies (NBA and RBA)

c) Top institutions should be encouraged and empowered (with funding) to create internal mentoring divisions to enable motivated faculty members to participate.

5.4. Benchmarking based on qualifiers

a) Benchmarking to identify institutions/programs based on basic pointers (also called qualifiers). Pointers like those used in NIRF: FSR, Student Enrolment Ratio, the Success rate of students in exams, Quality of faculty, etc.

b) Every non-accredited institution must submit its data for such benchmarking to an identified agency periodically and discern its level.

5.5. Expand capacities of existing accreditation bodies

a) Expand the capacity of NAAC and NBA by setting up multiple agencies of accreditation

b) Create national agencies in the public domain for accreditation and benchmarking, based on several disciplines: Law, Medical and allied fields, regions, etc.

c) NAAC, NBA, and newly created agencies should operate at the highest levels (A1 and A2) and maintain their quality standards and an international image

d) Benchmarking at the levels AC1 and AC2 should be handled by Regional Agencies to be set up for this purpose under a national coordinating agency for benchmarking

e) National agencies to issue lists for levels A1 and A2 after successful accreditation and Regional Benchmarking Agencies to issue such lists for levels AC1 and AC2

5.6. Generate Market usefulness of accreditation: This can act as an incentive for institutions to opt for quality and accreditation.

5.7. Accreditation criteria should be outcome-oriented: The criteria should focus on outcomes at all levels, especially student learning outcomes for every program of an institution

5.8. Make participation in NIRF rankings mandatory and set up NIRF as an independent organization:

a) All publicly funded institutions should be mandated to participate in NIRF Rankings

b) Expand the scope of NIRF to include rankings in popular branches of study and enable a larger number of institutions to become visible in the ranking lists

c) Set up NIRF as an independent organization to widen the scope of its activities

6. Promotion of Research and Innovation

6.1. Set up a research funding body at the national level: The National Research Foundation

a) **The National Research Foundation (NRF)**: NRF will be a Commission by an Act of Parliament and will aim at achieving excellence in knowledge creation, people, and R&I infrastructure.

b) **Structure of NRF**: NRF Operations will follow a Hub and Spoke model with the Central Office of NRF as the Hub and a network of Centre of Excellence (CoE), located in institutions of high repute, will be the Spokes.

c) **Functions of NRF**:

- NRF will fund research projects through grants.
- It will establish high-intensity thematic research labs in areas of science such as oceanography, nanotechnology, Information & Communication technology, with an additional focus on areas from Social Sciences.
- It will establish and support research centres to be set up in the existing higher education institutions
- Support and fund Post-Doctoral students
- Provide necessary research facilities to facilitate the creation of knowledge, innovation, and development in all fields of science and technology, and humanities

6.2. **Build a robust ecosystem of research networks by reaching out to local higher education institutions:** The CoEs will aggressively engage with local HEIs to establish a network of Sub-spokes called the Institution's Innovation and Research Councils (IIRC) which will engage in outcome-based innovation activities and bring out quality research outputs

7. Employability and Entrepreneurship

7.1. Establish Regulatory reforms for Vocational Education:

a) **Introduction of Vocational Education:** A formal vocational education structure should be incorporated into the college system with a credit structure that applies to both vocational and non-vocational education

b) **Setting up of screening tests for categorizing students:** An intensive pre-counselling session and screening test needs to be introduced to categorize students into the general and vocational stream. This needs to be done immediately after schooling

c) **Re-designing of curriculum:** The curriculum for vocational education will need to be revamped by UGC to incorporate skill courses with credits, and the curriculum has to be developed keeping in mind the changing needs of the industry.

d) **Establishing a tripartite structure:** A tripartite structure needs to be established between the industry, government, and institutions to boost skill development in top institutions

e) **Setting up of new regulations and norms:** Separate guidelines need to be formulated for the appointment of teachers in skill universities and colleges. Regulation also needs to be put in place that will posit the industry to employ and recognize vocationally certified workforce

7.2. Strategies for immediate implementation

a) **Implementation of training and counselling sessions**: Counselling and training sessions are required for heads of institutions and faculty members to re-orient their thinking and approach towards a vocation inclusive approach to education

b) **Creating Internship Opportunities**: Internships should be made compulsory during college education, and it has to be promoted most conveniently. A national internship platform for students and possible recruiters should also be created.

c) **Introduction of new courses**: New courses relevant to industry and skill development must be introduced in the curriculum. Machine learning/ data science courses should be made compulsory across the university system.

d) **Setting up incubation centres in institutions**: The Government may implement an exercise for doubling of High-end incubation centres in top Institutions and the creation of micro- incubation labs in colleges/universities immediately

e) **Setting up of centres of excellence**: An exclusive, professionally run Centre for Employment & Entrepreneurship is necessary for every higher education institution for student counselling arrangement, internship sourcing, providing market-based inputs on employment, entrepreneurship/start-up ideas & forward linkage

f) **Imparting vocational courses via MOOCs**: Vocational courses should be made available via MOOCs to make these courses more accessible. Fifteen lakhs have been allocated for 200 courses which will be made available via MOOCs.

8. Using Technology For Better Reach

8.1. Promoting online education to get the scale for quality education

a) **Improving the Quality of SWAYAM courses** - stringent quality control of MOOCs courses, more focus on formal courses, promoting multi-disciplinary programs, specialized courses in niche areas, selection of courses and course coordinators would be given importance.

b) **Strengthening and Expansion of Local Chapters** - of at least 10,000 Institutions in the next five years. Also, Digital Education Support Centres (DESCs) would be set up in 1000 Institutions in the underserved regions.

c) **Capacity Building of Course Coordinators of SWAYAM courses** - to improve the quality of courses being offered.

d) Internships and hands-on lab courses at premier institutes

e) Hive off SWAYAM into a separate autonomous Board driven organization under MHRD, to facilitate the more focused effort

f) **SWAYAM should graduate to a Virtual University** - to provide quality education with flexibility and ensuring employability

8.2. Training teachers in the use of technology and associated pedagogy

8.3. Promoting education technologies for improving the quality of education

a) Research in Edu Tech should be promoted significantly by setting up Centres of Excellence (CoE) in premier Institutions along with Incubation support facility for startups.

b) Interested faculty should be offered Fellowships to pursue further studies in Edu Tech area

c) More Ph. Ds should be offered and supported by MHRD in Edu Tech area

d) Policy to support Start-ups to promote Innovative work in the Edu Tech area

8.4. **Operation Digital Board:** It aims to introduce digital pedagogy in the classrooms through a blended mode of learning. Every classroom would be supported with a digital board, power, internet facilities.

8.5. Promoting various digital initiatives like National Digital Library, Swayam Prabha, e-Yantra, virtual labs, FOSSE / Spoken Tutorials

8.6. **Promoting digital initiatives in the unreached areas**

a) Special efforts to promote digital education in the so far unreached areas should be taken up as a targeted Outreach Initiative through DESCs.

b) The emphasis of this initiative should be more on assured adoption of the digital initiatives, by close handholding and mentoring, rather than just dissemination of information.

8.7. Public-Private Partnership for implementing digital initiatives

8.8. Other promotional interventions such as giving weightage for digital initiatives in the Rankings like NAAC/ NIRF, Internships to faculty and students in premier Institutions.

9. Internationalization of Higher Education

9.1. **Enhance inward mobility of international students**

a) **Study in India Program**: Granting autonomy to HEIs participating in the 'Study in India (SII)' program on matters relating to internationalization of higher education (October 2019 to March 2020)

b) **Scholarships & Accommodation Facilities**: Scholarships for international students (2020 - 21 to 2023 - 2024). Internationalisation of entrance examinations/tests for the selection/recruitment of international students (October 2019 to March 2020). Improving hostel facilities in HEIs participating in SII program (2020-21 to 2023-24)

c) **Promoting Institutional Mobility:** Indian students who want to pursue a PhD at top-200 ranked universities in the world, will be supported with scholarships (for up to 5 years), with the condition that the scholar will have to return to India after completion of their PhD for at least five years and then apply for the proposed 'PM Young Academician' scheme to be launched in 2020-21.

d) **Promoting Program Mobility (2020-21 to 2023-24):** To promote twinning and Joint Degrees / Joint PhDs, MHRD will incentivise selected Indian HEIs with funding.

9.2. **Promote Faculty Mobility**

a) **Establishing partnerships for global mobility of faculty at Indian HEIs (October 2019 to 2023-24):** International strategic partnerships for global mobility of faculty from Indian HEIs will be promoted.

b) **Expanding academic collaboration with HEIs abroad (October 2019 to 2023-24)** Tie-ups with reputed foreign higher education institutions will be expanded for knowledge sharing and research collaboration

- **Distinguished Academician Return' (2020-21 to 2023-24)** This scheme aims at facilitating deeper engagement of distinguished global faculty/scientists with Indian institutions – by offering them 'dual' appointments at Indian institutions (along with their foreign appointment), to spend at least three months every year at the Indian institution.
- '**Research Sabbaticals' (2020-21 to 2023-24)** This scheme aims at facilitating temporary migration of global academics on research sabbaticals of up to 3 years, where they spend at least three months every year at the Indian host institution for at least three years (while remaining employed at foreign university for the period).

- **'Young Academician Return' (2020-21 to 2023-24)**: The objective of this scheme is to facilitate permanent return/ migration to India of young Indian scientists under the age of 40.

c) **Promoting Institutional Mobility**: Specific policy initiatives are taken up for increasing the number of the offshore campus of Indian HEIs abroad and allowing foreign higher education institutions to set up their branch campus within India.

d) **Program Mobility**: Program mobility and cross border delivery of higher education programs are substantially enhanced by extending the reach of Open and Distance Learning (ODL) programs and online courses offered by Indian HEIs and allowing credit transfer to promote the internationalisation of higher education.

10. Financing Higher Education

10.1. **Initiating HEFA reforms:** Tenure of HEFA loan to be raised to 15 years. Among the HEFA reforms, the cost of maintenance of assets created must also be considered while reviewing the total cost to Government.

10.2. **Transformation of Governance Structure**: Governance structure of the university system must be transformed drastically into a professional and functionally autonomous one, with an independent regulatory structure. Standalone research institutions must be affiliated to a University to improve their credibility, outreach, and funding.

10.3. **New modes of generating funds**: Opening up of sophisticated research equipment by HEIs to industry and other external users to both improve their utilization and also earn revenues through them. Maintenance costs of assets created continuously should also be aligned with the fee structure dynamically. Fee revision to be based on the cost of education and protect the institution from fee subsidy. Typical funding model has to be worked out for State Universities with funding based on performance metrics.

11. **Investments proposed:** The project proposes an investment of Rs. 1,72,490 Cr as additionality to the higher education budget. The additionality is intended to be channelled from the Higher Education Financing Agency (HEFA) through a Special Purpose Vehicle (SPV) that would be formed. The amount would, in effect, be a grant to the institution using an online fund transfer mechanism. The repayment to HEFA would be done by the SPV for which Government would provide grants from its regular budgets.

Focus	Total cost (Rs Cr)	Cost as per management		Share of funds		% share
		CFIs	State	GoI (Rs	State	
Access and GER	30338	6068	24270	20630	9708	17.59
Quality	36429	14572	21857	27686	8743	21.12
Excellence	25150	15090	10060	21126	4024	14.58
Governance	29775	8933	20843	21438	8337	17.26
Accreditation	1012	506	506	810	202	0.59
Research and innovation	16755	10053	6702	14074	2681	9.71
Employability	12405	3722	8684	8932	3473	7.19
Technology	6310	4417	1893	5553	757	3.66
Internationalisation	9316	6521	2795	9316	0	5.40
Financing	5000	5000	0	5000	0	2.90
	172490	74880	97610	134564	37926	100.00

CHAPTER 1

EQUIP Group 1: Strategies for Expanding Access

The first Group of EQUIP has worked on the following objectives:

- Increase the GER to 40 by 2024 (from 26.3 in 2018)
- Addition of 2 crore extra learners by 2024
- Make the system more inclusive so that the GER of the Socially backward sections is not below the national levels.

1. The present status of GER of HE and regional backwardness.

At present, there are 903 universities, 39050 colleges, and 10011 standalone institutions as listed on the AISHE portal. Two hundred eighty-five universities are affiliating, i.e., having colleges. Three hundred forty-three universities are privately managed. Three hundred fifty-seven universities are located in rural areas. Fifteen universities are exclusively for women. Total enrolment in higher education has been estimated to be 36.6 million, with 19.2 million boys and 17.4 million girls. Girls constitute 47.6% of the total enrolment.

The Gross Enrolment Ratio (GER) in higher education in India is 25.8%, which is calculated for 18-23 years of age group. GER for the male population is 26.3%, and for females, it is 25.4%. For scheduled castes, it is 21.8%, and for scheduled tribes, it is 15.9% as compared to the national GER of 25.8%

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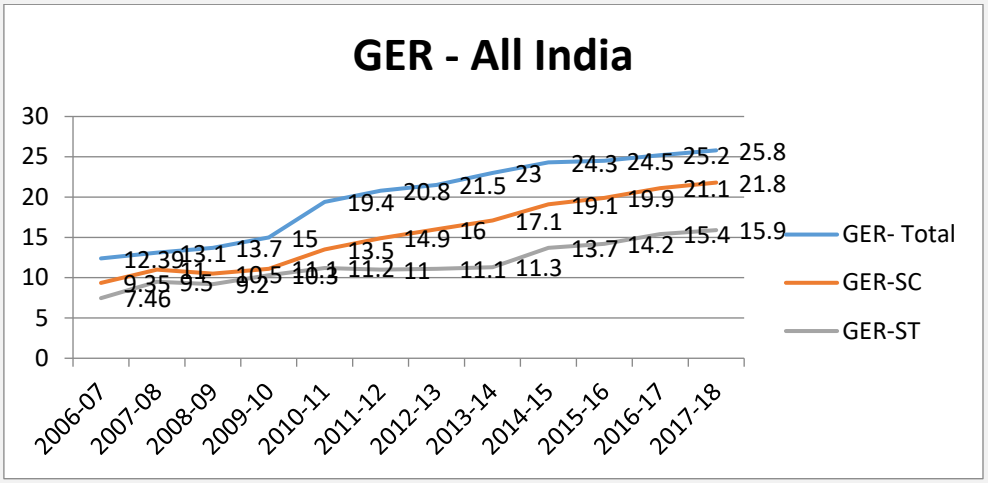


Figure 1

The graph showing the annual increase in GER for the last 12 years, including SC & ST is as above in figure 1. A comparison for BRICS countries is shown in figure 2. Inter-country comparison with other countries is also shown in figure 3 and 4. The regional dispersal in GER for the top 10 and bottom 10 states are shown in figure 6 and 7, respectively.

S. No	Country	GER	Ages by the level of education (Tertiary)	Total Population (million)				
				2010	2020	2030	2040	2050
1	Brazil	50.49	18-22	185.36	198.9	211.3	215.7	214.5
2	Russia	81.82	18-22	115.97	108.9	98.16	87.36	79.52
3	India	25.8	18-23	1160	1390	1520	1460	1470
4	China	51.01	18-22	1290	1290	1200	1190	1090
5	South Africa	20.48	19-23	46.2	47.71	48.8	48.88	48.52

Figure 2

The graph showing program-wise enrolment (overall, as well as for distance education) is given in figure 8. The main theme which comes out of this graph is that 81% of the total students in higher education are pursuing top 10 programs only, which include: BA, 26.4%; BA (Honours), 4.13%; MA, 4.38%; BSc, 13.38%; B.Com, 11.14%; B. Tech, 5.89%; BE, 5.05%; Diploma, 5.92%; B. Ed, 2.89%; and MSc., 1.97%. When it comes to distance education (ODL), the statistics are further skewed: 40.96% of students are pursuing BA, 16.81% of students are pursuing an MA. The percentage of students pursuing a science course is only 5.51%. Students pursuing diploma and post-graduate diploma are only 4.66%.

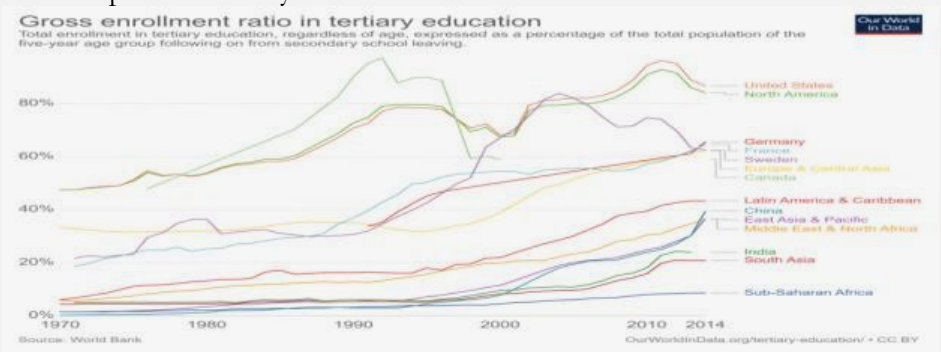


Figure 3

The government funding of higher education is more in favour of creating institutions of excellence, rather than giving mass higher education. While most of the funding goes to IITs, central universities, NITs, only about Rs.7,000 crore, out of a budget of Rs. 35,000 crore goes to state-level institutions of higher education, from central government and only Rs. 125 crores are allocated for ODL. This has to change substantially if we want to increase the GER substantially.

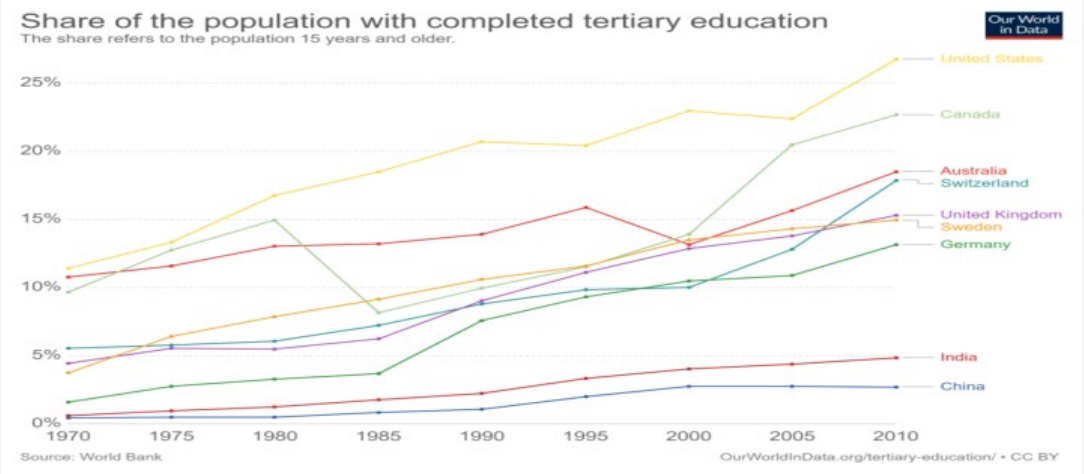


Figure 4

Year	Year of passing class 12 and year of admission in HE	The number passed 12 grade (in lakh) with 8% annual increase in pass-out	School pass out in 17-18 and 10% increase annually in pass out	18-23 years actual population and then 1% annual increase	Annual Enrolment in HE In lakh	Total students in HEI (in lakh)
2013-14	**2014**	85.32			92.39	323.36
2014-15	**2015**	95.06			97.75	342.12
2015-16	**2016**	99.37			98.81	345.84
2016-17	**2017**	105.33			102.00	357
2017-18	**2018**	112.71	112.00	1418.00	104.69	366.42
2018-19	**2019**	121.72	123.20	1432.18	109.55	***383.42***
2019-20	**2020**	131.46	135.52	1446.50	120.94	***423.30***
2020-21	**2021**	141.98	149.07	1460.97	132.04	***462.13***
2021-22	**2022**	153.33	163.98	1475.58	144.13	***504.47***
2022-23	**2023**	165.60	180.38	1490.33	157.32	***550.62***
2023-24	**2024**	178.85	198.41	1505.24	169.91	***594.67***

Figure 5

State/UTs	% of share of state in GER	% of Total Population	Ratio	Overall Rank	GER
Delhi	2.90	1.39	2.10	1	46.3
Puducherry	0.20	0.10	1.93	2	45.4
Tamil Nadu	9.39	5.96	1.58	3	48.6
Sikkim	0.08	0.05	1.57	4	37.4
Uttarakhand	1.19	0.83	1.43	5	36.3
Himachal Pradesh	0.75	0.57	1.33	6	37.9
Telangana	3.87	2.96	1.31	7	35.7
Maharashtra	11.28	9.28	1.21	8	31.1
Manipur	0.29	0.24	1.21	9	31.8
Haryana	2.49	2.09	1.19	10	28.7

Figure 6

State	% of the share of state in GER	% of Total Population	Ratio	Overall Rank	GER
Bihar	**4.13**	**8.60**	**0.48**	**32**	**13**
Jharkhand	**1.88**	**2.72**	**0.69**	**31**	**18**
Assam	**1.85**	**2.58**	**0.72**	**30**	**18.1**
Nagaland	**0.12**	**0.16**	**0.73**	**29**	**17.8**
West Bengal	**5.56**	**7.54**	**0.74**	**28**	**18.7**
Chhattisgarh	**1.57**	**2.11**	**0.74**	**27**	**18.4**
Gujarat	**3.97**	**4.99**	**0.79**	**26**	**20.1**
Odisha	**2.77**	**3.47**	**0.80**	**25**	**22**
Tripura	**0.25**	**0.30**	**0.82**	**24**	**21.2**
Madhya Pradesh	**5.15**	**6.00**	**0.86**	**23**	**21.2**

Figure 7

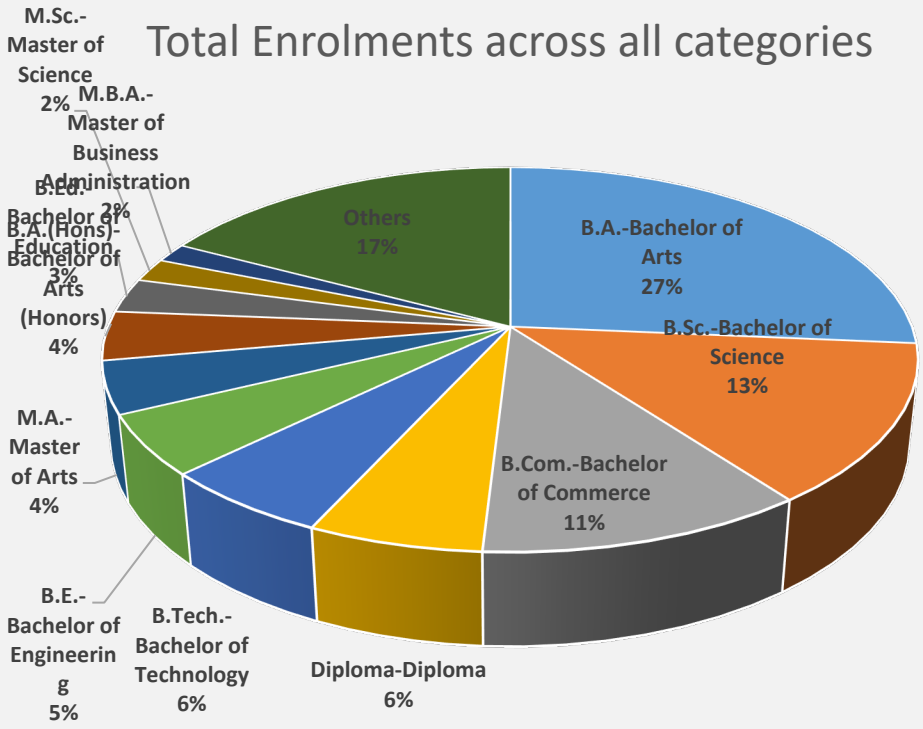


Figure 8

2. Causes of low access

i. Low probability of employment after degree.
ii. The poor economic condition of potential students (18-23 years) who have to contribute to the economic well-being of the family.
iii. Absence of good quality study material in vernacular languages.
iv. Non-availability of the institutions of higher study and ODL study centres in the vicinity, in certain regions.
v. The limitation of students available after Grade 12.
vi. Absence of career guidance and lack of information about financial assistance available for higher studies.

3. Is the target given desirable to achieve? If yes, is it achievable?

Desirability: When we look at India's position in the world in terms of GER, we can find that there is a dire need to increase our GER in HE. However, if we look at the detailed statistics of the kind of programs in which most of our students are graduating, we can see that there is a huge chasm between the skill requirements of the Indian economy and the supply of graduates. While BA and MA degrees can make more aware citizens, their ability to contribute to the needs of the economy is low. As a result, we have already created a situation of having a pool of unemployed graduates and post-graduates. Their failure to get economic returns from their education contributes to their social frustration. Therefore, without re-orienting the entire higher education system towards meeting the economic aspirations of today's youth, there is no gain in simply ballooning the student enrolment numbers in an existing manner. This will mean bringing in a lot of vocational and skill education in every degree program.

Feasibility: We have made some calculations about projections for attainable GER. The detailed calculations of the same are given in figure 5. In this Table, we have assumed that the average time spent by a student in the higher education system is 3.5 years. This assumption is made because the data of annual intake into higher education is not available in AISHE. As per the Table, if we assume that the number of the 12th-grade passes will increase at 8% and that by 2024, 95% of students who pass out from class 12 will like to go for higher education, the maximum attainable GER will be 40%. However, if we assume a 10% increase every year in 12th-grade pass-out (which is quite ambitious), the maximum attainable GER is 43.8%.

4. Broad suggestions:

Before we suggest any strategies, we would like to suggest some broad policy measures, which are as follows:

a) Any expansion of higher education should be in alignment with the needs of the economy.

(i) The high amount of vocationalisation of higher education is required through a modular approach. We would suggest that all non-technical and non- professional degree courses (e.g., BA, B.Sc. and B.Com courses) should have anything in between 20% to 35% of their course content as vocational. This can easily be done using the vocational modules of MOOCs and aided by local artisan/ expert who can be hired on a contractual basis. The detailed plan for funding of this can be worked out by the group on employability.

(ii) Decentralization of vocational curriculum contextualized to local needs will further be needed for deeper penetration of Vocationalisation among SC, ST students.

(iii) In 2014, Department of School Education, MHRD had issued a letter to all states about B. Voc courses approved by UGC with the direction that each state should plan for students who have opted for vocational education at school level and who are desirous of higher study in such vocations at the university level. This needs to be vigorously pursued.

b) **The world is changing very fast. Technology is going to change all the job descriptions and skills required for that**. The government should set up a small group to suggest a module of certain basic minimum skills required to be possessed by all students irrespective of their program. This could include language, IT, mathematical, and certain soft skills. Such a module should be part of all curricula after class 12 as a finishing school to make up for whatever deficiency they had in schooling. This finishing school can be part of the existing colleges/schools.

c) **The best way for expanding access is by expanding the availability of ODL in the open universities as well as in conventional universities**. The course material used for distance learning can be a blend of MOOCs modules and physical form. The government can develop a network of MOOCs delivery centres spread throughout the country, which can also function as the study centres of open universities and conventional universities. The current study centre can be upgraded for this. At present, IGNOU has about 3000 study centres catering to 32 lakh students (total number of students enrolled across all levels). The calculation shows that for a projected extra enrolment of 50 lakh in ODL system we would need about 5000 new study centres. This will, however, require the ODL regulation to be amended to allow 1000 students (in place of 500 students currently allowed) per study centre.

d) To facilitate the manpower support to facilitate the expansion of ODL in remote districts of India, it is suggested that on the lines of NET qualified teachers; there can be an **ODL qualified instructors**, who can provide the last mile teaching support to the students wherever counsellors from government college/ lab, etc. are not available. He/she may or

may not be a teacher/ professor. These instructors who are not in the regular colleges can be given the incentive of counting the number of counselling hours as a relevant teaching experience for prospective job application to universities and colleges.

e) An immediate way to increase the access to higher education is to have all the available **MOOCs translated in all the vernacular languages**, which can be used by the ODL system and by conventional universities also.

f) Having a rigorous assessment and quality certification system is a must for ODL education. The perception of the low quality of ODL graduate will improve largely by this measure.

g) Recognition of NSQF equivalent levels in recruitment rules for all government agencies and employers will result in increasing the attractiveness of qualifications through multiple means provided in NSQF framework and thus will incentivize young passouts from school to opt for NSQF based courses.

h) The group is clearly of the opinion that except for removing the deficit of colleges in certain backward areas as suggested in our strategy, no new colleges or institutions should be created to expand access. The entire emphasis should be on a maximum utilization of existing colleges and educational infrastructure available for schools also. As per AISHE 2017-18, 7.9% of the colleges have student strength of less than 50, less than 18.5% colleges have student strength of less than 100, 38.2% of the colleges have less than 200 students. No more investment in bricks and mortar institutions is needed.

i) The group is also of the opinion that improvement in quality and relevance of courses will itself give a boost to GER.

j) Overall funding to the education sector has to increase substantially. Details are shown at the end of this chapter.

k) The central universities have got huge capacity (land as well as intellectual) for starting under-graduate programs. However, many CUs are not keen to undertake UG programs. Adding under-graduate programs in central universities can easily increase the student capacity of central universities, without making any new investments. Even IISc, Bangalore has UG programs.

l) The concept of Eligible Enrolment Ratio (EER) (enrolment in higher education out of persons in the age group of 18-23 who have passed XII class) may be projected along with GER. India should project its EER, which is substantially high for India along with GER in all its policy documents.

5. Strategies recommended

A. For increasing overall access:

i. Increase the GER of higher secondary school (the budget needs to be worked out by school education).

ii. School education department should set apart a separate budget for the dissemination of information to grade 11 and 12 students about the opportunities available in higher education, as well as the availability of scholarships, hostels and employment opportunities through that. CBSE has already developed a portal (https://cbseportal.com/Tips/What-To-Do-After-12th-Class). All state boards can try similar thing.

iii. To increase the attractiveness of HE, the students need to get an opportunity to earn some money while studying. The local colleges can be used as extension centres for specialized technical/ vocational services. In these centres, the students will get an opportunity to earn. The best example of this is the model of using science college laboratories for soil testing with the help of students in Gujarat. This experiment in which the institution was

given Rs 50 per testing of a sample and the students also earned a lot. Whenever the institution needs extra workforce for extra activities, the institutions should allow students to do them and pay for the same — for example, the temporary duty of a librarian, lab attendant, maintenance staff, etc.

iv. All universities may be encouraged to offer courses in dual mode. However, the examination for both distance and conventional regular mode candidate should be the same in a dual mode university. Also, the existing colleges and universities need to be strengthened in terms of IT infrastructure.

v. Sharing of class 12 pass-outs from NIOS/ state open schools/ state boards with higher educational institutions: To increase the ease of admission process for the deprived section of students passing out from school, the database of class 12 pass-outs should be shared with dual mode universities, IGNOU, and state open universities. This will facilitate such class 12 pass out students, who were/are unable to find admission in the conventional face to face universities and colleges, to access higher education through the open university system. This does not require any substantial funding. Only sharing of a database of the state board, NIOS with ODL system is needed to kick start this process.

vi. In contra-distinction to professional courses, vocational qualifications like B.Voc/D.Voc can be allowed in distance mode by the suitable association of the vocational colleges with corresponding field facilities. The vocational education should be made modular with facility for credit transfer and accumulation within the framework of NSQF, with open exit and entry in line with MHRD and UGC letters of 2014.

B. For increasing access to SC, ST:

i) For a GER of 40, 1.53 Cr SC/ST students should be on rolls by 2024. It is presumed that 10% of them will be admitted to conventional colleges. These colleges are not available in their vicinity, and therefore providing accommodation in a hostel near to the higher institution of learning would be essential. These hostels would be on the build-own-operate model and set up in the private sector. It is estimated that every year, 16 lakh (approximately) SC/ST students will require hostel cum food facility to facilitate their continued education at the college level. The annual cost for food and allied activities in a *samras* type hostel is Rs. 30,000 per year. Hence, for four years, the estimated cost is 16 lakh x Rs.30,000 x 4 yrs. = Rs.19,200 Cr.

ii) For a GER of 40, the additional annual SC/ST enrolment has to be 23.4 lakh students. However, a good number of SC/ST students come from school education with a handicap in language, mathematics, and computing skills. Higher skill levels in these three subjects are also a precursor to higher employability later. It is presumed that about 20% of the SC/ST students (who are additionally enrolled - per year 5 lakh) would require hand-holding before admission in the higher educational institution. An investment of Rs. 5,000 per student would be made requiring an investment of Rs.1,000 Cr (5 lakh students x Rs.5,000 per student x 4 yrs. = 1,000 Cr)

iii) Within ODL, the pass percentage of SC/ST students is around 20%. The current Govt. of India rules stipulate that the college education to SC/ST students (other than technical and professional program) should be free. However, there is no incentive for the SC/ST students to successfully complete the program. So, the tuition fee waived goes waste. Hence, an alternate option could be the following: -

- Currently, SC/ST students get a 50% waiver in the tuition fee at the time of admission, and even the 50% paid by them gets returned if they appear for the exam. In this system, there is no incentive to successfully complete the course. To incentivize the student to pass the end-semester/ year-end examination, it is proposed to launch a Scheme named SUccess REwarded (SURE), under which,

the entire tuition fee with an upper ceiling of Rs.10,000/ year should be paid to the student as a reward for passing the exam. This will take care of the sundry expenses which a student bears to pursue higher education, incentivizes success and also develop risk-taking ability in him in a sense the student is opting for an option which necessitates that he passes the exam.

- Costing: Since it is presumed that 90% of the additional 23.4 lakh SC/ST students enrolled each year will be studying through ODL, fresh additional annual SC/ST students' intake in ODL is 23.4x0.9 = 21.06 lakh (say 20 lakh). Let us presume that 50% of the students will pass the end semester examination, and the annual fee is Rs.5000/ year. Hence the financial requirement will be 20 lakh x Rs.5,000 + 10 lakh x Rs.5,000 = Rs.1500 crore/ year or Rs.6000 Cr for four years. [It is presumed here that courses whose annual fee is more than Rs.5000/ year are very few. BCA is one such course where annual fee (at IGNOU) is Rs.12,000 per year].
- Further, to incentivize institutions to pay more attention to SC/ST students passing the examination, 10% of the SURE can be given to the institution having the ODL study centre. So, the cost implication will be 6,000 crores x 10% = 600 cr.

C. For increasing access in backward areas:

To give impetus to students to be able to go for vocational colleges, 500 colleges in educationally backward districts can be upgraded so that they can run vocational courses. Assuming 200 students will enrol in each of these colleges every year, one lakh students will get enrolled in these 500 colleges every year. If Rs.10,000 per student per year is given as a grant to college for its up gradation, the cost will be 1,00,000 x Rs.10,000x5 years=Rs.500 crore for five years.

D. For increasing penetration of ODL:

i. As per ODL regulation, for 60 lakh additional intake every year through ODL, 12,000 study centres are needed. However, if 3,000 blended MOOCs based learning centres are opened, the learning centre will be able to effectively engage more students than the current ODL stipulation of 500 students per learning centre. Thus, it is safe to reduce the opening of an additional learning centre to 2/3^{rd,} i.e., 8000 new LSCs will be needed. Out of these 3000 can be blended MOOCs based learning centre and 5000 could be conventional study centre. These conventional study centres should be in educationally backward block/ districts where IT penetration is weak.

ii. Since smart classrooms are to be separately funded through the operational digital board, for the proposed additional 3,000 MOOCs based learning centre, extra funding is not needed.

iii. For such areas where there is no digital penetration, conventional study centre will be needed, which will need extra funding. As proposed, if there is no college in a block or district (incidentally there are 11 such districts in 2018, and there are about 3500 educationally backward blocks), study centre for UG level can be opened in colleges or Kasturba Gandhi Balika Vidyalaya, Kendriya Vidyalaya, Navodaya Vidyalayas, other higher secondary schools or govt Kendra. The college/higher secondary school/ Navodaya Vidyalayas/ Government Krishi Vigyan Kendra/ similar

establishment can be given a grant of Rs.10 lakh per year for five years. So the cost will be 5,000xRs. 10 lakhx5 years=2,500 crore.

iv. The Indira Gandhi National Open University (IGNOU), the premier institution set up under an Act of Parliament would need to be strengthened. The current IT infrastructure is designed to cater to 2 lakh fresh students. However fresh enrolment for IGNOU is likely to reach 10 lakhs (50% of additional ODL annual enrolment). Thus, investment in IT is needed. Investment for ICT improvement in infrastructure for IGNOU will be Rs.185 crores (based on the estimate provided by IGNOU duly cleared by its FC &BoG in May 2019). This includes data centre communication application centre and computers (Rs.78 crore), media centre up gradation for new students and multi-media-based facilities (Rs.50 crore) and regional centre ICT upgrades (Rs.37 crore) and their maintenance cost Rs.17 crore. For ICT infrastructure upgradation of the State Open Universities, Rs.333 crore will be needed.

6. Financial implications:

The investments required for expanding access with special emphasis on access to the socially backward sections, the following

Strategy	**Calculation**	**Cost in Rs Cr**
Double enrolment of SC and triple enrolment of ST		
Enabling setting up of 8000 *samras* hostels in underserved areas on	Scholarships for16 lakh students @ Rs.30000 per year for four years to meet	19,200
Bridge course for students in the 0first-year degree in language, maths	5 lakh students every year for four years @ Rs.5,000 per student	1000
ODL: 50% tuition fee waiver and reimbursement of 50% fee of	20 lakh students who join every year @ Rs.5,000 per student; and 10 lakh	(20 lakh x Rs. 5000 + 10 lakh
ODL: Incentivising institutions for an outcome of SC/ST student	10% of the fee to be given as incentive to the institution for passing of SC/ST	6000x.01 = Rs. 600 cr
Geographically backward areas to catch up with the national average		
Upgrading 500 colleges into vocational colleges in the	500 colleges, 1 lakh students per year, @ Rs.10000 per student per year	500
Establish 3000 additional blended MOOCs based learning centre in all	If smart classrooms are being provided, which can also be used for study centre,	0
Increasing GER through ODL		
Doubling the Learner Support Centres by adding 5,000 new centres	5,000 new LSCs centres in underserved Blocks/District an annual grant of Rs.	2500
Cost for IGNOU data centre, connectivity, application	Taken from IGNOU proposal cleared by its FC & BoG in May 2019.	185
ODL ICT Infrastructure for state open universities.	Taken from Annexure 14. I of Access report dated 3.5.19	333
Cost of translation		20
Total		**30338**

CHAPTER 2

EQUIP Group-2: Towards Global Best Teaching/Learning Process

KEY THRUST AREAS

- Curriculum revision - review yearly and revise at least once in 3-5 years - modalities for mandatory implementation - incentivizing adoption of the revised curriculum - weightage in NIRF and NBA/NAAC; Assessment/Examination reforms; Energizing Classroom - student feedback
- Filling up vacancies of full-time faculty - adjunct faculty to be increased; Induction and Professional development of faculty – strategies and Tenure track of faculty
- Building state-of-the-art infrastructure for all institutions
- Mentorship of neighbouring institutions.

2.1. INTRODUCTION

The effective teaching-learning process is critical for ensuring that all students attain the defined program/course learning outcomes and the expected graduate attributes that make a sustained, substantial and positive influence on how they think, act and feel. Improvement of teaching-learning processes in HEIs is considered critical for fostering quality higher education. Teaching-learning process lies at the core of the education system and is central to all other reforms.

2.2. SITUATION OVERVIEW: ISSUES AND CONCERNS

India has several high-quality higher education institutions (HEIs), though few of them appear on the list of global rankings. Also, a wide variation exists in the quality of education. Some of the deficiencies affecting quality include the following:

2.2.1. Issues Affecting Student Excellence: A sizeable number of students lack the key prerequisites required for their chosen program of study. Many are unable to complete their programs of study within the prescribed duration. Still grave is the fact that on completion of their course, students do not achieve the desired program learning outcomes, thereby failing to demonstrate the expected graduate attributes.

2.2.2. Deficiencies In Curricular Effectiveness

a) Curricular irrelevance: The curricula are not appropriate to the current day and future socio-economic needs, particularly industry/employer requirements. As a result, students are not equipped with modern day life skills or 21st-century skills. A greater concern is that a large number of graduates lack employability skills.

b) Lack of Learner Preparedness: Currently, there is a lack of a synergistic link between secondary and higher education. The students in secondary schools need career

counselling to understand their aptitudes and capabilities. Similarly, in higher education, learners are not adequately equipped to deal with their programs/courses of study.

c) Inadequacies in program design: The syllabi and structure of programs/courses of study remain rigid and narrow and lack a holistic approach to knowledge and skills acquisition, which in the contemporary times is multi-disciplinary, inter-disciplinary and cross-disciplinary. There is too much emphasis on a single discipline, and no cross-discipline learning is encouraged, e.g., students studying science/technology do not receive opportunities to take up courses relating to music, art, literature, humanities, social sciences, etc. and vice versa.

d) Limited faculty role in curriculum design: The lack of involvement as well as autonomy by the faculty in designing curricula negatively impacts pedagogy. The present affiliating system is a great impediment which precludes any role for faculty as it is a top-down approach. Currently, learning is overly rote-based, with inadequate emphasis on activity/, discovery/, discussion-based, and experiential learning. The separation of education and research, coupled with a negligible emphasis on outreach activities, community engagement, and action-based projects are worrisome.

e) Teaching effectiveness-related issues: The pedagogical practices in most HEIs continue to remain centred predominantly around rote learning and lecture methods with little opportunity for participative and collaborative learning methods that promote critical thinking and analysis, discussion, and application.

f) Assessment-related shortcomings: Over-emphasis on the external assessment of students with inadequate formative assessments. There is a mismatch between degrees and the competencies assessed, leading to a 'crisis of legitimacy' of the examination/qualification systems.

2.2.3. Faculty-Related Deficiencies

a) Unfilled faculty positions: Many HEIs woefully lack in the numbers of faculty as well as in having good quality faculty. There are too many faculty members that are on temporary appointments, with low salaries and job insecurity. Indeed, faculty vacancies against permanent roles remain extremely high. Faculty vacancies in the Central Universities are reported to be over 30%, at other universities, the numbers are generally even worse. Ad hoc and contractual appointments have become the norm. This is true for both public and private HEIs. Also, heavy teaching loads, with extremely high student-teacher ratios in each class (sometimes higher than 50 to 1), leave little time for adequate preparation for classes or student interaction, let alone time for research or other university activities and service. As a result, the standards of teaching and research at a significant proportion of Indian universities are far below international standards.

b) Limited opportunities for professional development: The opportunity for induction training for initial professional preparation of newly recruited Assistant Professors and continuous professional development of incumbent faculty remains limited. Consequently, faculty do not have adequate opportunities to improve their performance in the core areas of teaching, research, and scholarship; learn about new fields/frontiers, apply new pedagogies, instructional delivery models, and use of technologies to enhance learning; achieve excellence in research and scholarship.

c) Poor working conditions: The working conditions of and facilities for faculty remain suboptimal. A further challenge with faculty excellence is that career management is too often not based on merit, but rather on seniority, or other arbitrary factors. There is no clear tenure track/career progression system at most institutions that ensures that faculty recruitment, retention, promotions, and upward mobility are all based on merit and quality of performance in teaching, research, scholarship, and service. Incentives for recognizing outstanding work are not always a part of the system, thus severely reducing faculty motivation and commitment to excellence.

2.2.4. Affiliating System and Inadequate Infrastructure / Inputs

a) Problems of large affiliating universities: The bane of higher education has been the large affiliating system which has resulted in Universities devoting its larger share of time and resources only in the conduct of examinations. This leaves very little scope for any reforms towards improving the quality of teaching and learning. Also, large affiliating systems lend themselves to sub-optimal availability and use of infrastructural resources.

b) Deficiencies related to academic infrastructure: Many HEIs lack adequate academic facilities viz., classrooms, laboratories, computing equipment, ICT - enabled classroom facilities and sports infrastructure. The use of technology in higher education remains limited. Also, limited financing continues to constrain efforts to improve academic infrastructure and learning resources.

c) The inappropriate working environment for faculty: Many HEIs lack the basic facilities and infrastructure needed for faculty. Many of them are deficient in terms of essential facilities such as office space, teaching supplies, and learning resources, labs, library, pleasant classroom spaces, and campuses, etc. which are required for ensuring an environment conducive for effective teaching and learning.

2.2.5. Inadequate Student Support Systems

a) Absence of appropriate student support system*:* Student support is currently very limited in higher education. While some form of academic support may be available, they are neither institutionalized nor uniform across HEIs. The grievance handling and counselling services that provide emotional support to learners who face much stress are generally missing.

2.3. PROMOTING EXCELLENCE IN TEACHING-LEARNING: GLOBAL TRENDS

Achieving excellence in the teaching-learning process in HEIs constitutes one of the main components of the education development agenda in both developed and developing countries. The strategic approaches adopted to enhance the quality of teaching-learning process include reforms aimed at improving the overall learning experience for students in HEIs through reorientation of the contents and process of education, directed at achieving curricular excellence, including teaching excellence and overhauling learning assessment methods/procedures. The objective is to expand the pool of the institutions of excellence gradually so that the standards and quality of education available in these institutions become the norm throughout the nation. While building institutions of excellence, India and many countries follow the path of western nations of the USA and Western Europe and adopt the best practices being followed by

the top ranking institutions at the global level, such attempts have to be tempered to the specific local conditions, such as funds, institutional arrangements, and democratic aspirations of newly emerging social groups. The American path seems to be a mix of private and public institutions of excellence with a long history of the evolution of such a mix with major initiatives coming from civil society in step with the needs of a fast-growing society and economy. The Chinese path has been centred on an approach where the education reform has been envisioned and enforced with great determination by the government and a massive state funding of select universities and restructuring of higher educational institutions in a relatively short period. The challenge before India is how to foster the mix of private and public institutions that we have in India and also to realize the aspiration of ensuring high-quality education and seeing some of our HEIs among the top-ranking institutions of the world happening in a relatively short period. Globally some emerging curricular trends and thrusts that promote excellence in the teaching-learning process are centred on designing learning experiences that help students acquire and demonstrate:

2.3.1. A fundamental or coherent understanding of a field of study (mono/multi/interdisciplinary), its different learning areas and applications, its linkages with related field of study; and current and emerging developments in the field of study; procedural knowledge that help create different types of professionals related to a chosen field(s) of study; specialized skills and capability to extrapolate from what one has learned, and apply acquired competencies in new/unfamiliar contexts, rather than replicate curriculum content knowledge, to generate solutions to specific problems in a chosen field of study.

2.3.2. Lifelong learning capability, including 'learning how to learn' through self-paced and self-directed learning that support personal development and meet economic, social and cultural objectives and help individuals re-skill and up-skill and successfully adapt to future employment trends and changing trades and demands of the workplace.

2.3.3. 21st Century Skills or global competencies, such as complex problem solving, critical thinking, creativity, people management, coordinating/collaborating with others, emotional intelligence, judgment and decision making, service orientation, negotiation skills, cognitive flexibility. These are, in addition to communication skills, digital literacy, leadership readiness/skills, the capability to work in teams, self-directed work and self-management, reflective thinking, the capability to function effectively in multicultural and multilingual contexts, ethical and moral awareness and reasoning, etc. Socio-affective-emotional skills that enable learners to interact with others and manage relationships.

2.3.4. Knowledge and skills that help students respond to the Fourth Industrial Revolution characterized by the centrality of disruptive and emerging technologies fusing the physical, digital, and biological worlds that is transforming the way people live and work. A key thrust will enable students to respond to the fast pace of technological developments and innovations, such as Artificial Intelligence, Big Data, and Internet of Things, Robotics, etc. that drive major shift in employers' demand for skills and to the increasing demand for competencies required by employees to carry out "non-routine activities" which are less predictable, requiring flexibility and adaptability.

2.3.5. Employability skills encompassing workplace-ready skills and skills that are transferable beyond the study of a chosen academic field of study/work. Entrepreneurial skills

through enterprise creation, improved product development, or a new mode of organization that helps enhance the economic vitality of industries and communities.

2.3.6. Capacities that promote one's wellness, such as good health, psycho-social wellbeing, and sound ethical grounding –necessary for high-quality learning.

2.4 OVERARCHING GOAL/TARGET

Target: The content and process of higher education are reoriented, and excellence in the teaching-learning process is achieved in all higher education institutions (HEIs) across the country.

2.5 STRATEGIES

Achieving excellence in the teaching-learning process in all HEIs is one of the underlying objectives of the Education Quality Upgradation and Inclusion Program (EQUIP). The main thrust is on improving the quality of education in all HEIs (universities and colleges), including private institutions. It is emphasized that the reforms will cover all institutions in the higher education sector and will be across all types of HEIs, such as Universities, colleges, institutes, whether publicly funded or private. The private sector will also be encouraged to adopt the quality infusion reforms, and funds will be provided for ensuring that faculty and students are also covered through the initiatives for excellence. This is critical for broad-basing excellence as a sustainable model. Currently, existing schemes promoting quality even in the State sector have not covered private institutions, which need to be changed if we have to bring out qualitative improvements in teaching-learning across the HE sector. The investment in quality improvement must ensure that all HEIs, whether Central, State, or private, must be viewed through a similar lens and given a level playing field to implement reform initiatives. It is, however, equally incumbent that the private institutions will be transparent in their operations and will adhere to all due processes of accountability. These strategies are aligned to the vision of NITI Aayog and also the Goals enshrined in the 2030 agenda for sustainable development. A deconstruction of the existing HE structure is strongly recommended. This deconstruction process requires a very strong infusion of liberal education as a component in the higher education system. For this purpose, a variety of fundamental changes are required:

2.5.1. New degree programs to be created,
2.5.2. Existing degree programs would have to be modified along the lines of liberal education, as a part of their program,
2.5.3. Teachers/faculty qualifications will have to be specified; new pedagogies will have to be taught to the teachers/faculty first,
2.5.4. The new regulatory framework would be required to accommodate these changes with reasonable flexibility and academic freedom.
2.5.5. A four-pronged approach to achieving excellence in the teaching-learning process is proposed.
2.5.6. Undertake curriculum renewal directed at introducing a broad-based liberal education with a rigorous specialization in disciplines or fields of study, as chosen by students, promoting learner-centric pedagogical practices and overhauling student assessments.
2.5.7. Achieve faculty excellence by ensuring the availability of a cadre of diverse faculty who are outstanding teachers, researchers, and scholars who can contribute to enhanced teaching effectiveness.

2.5.8. Make available necessary academic infrastructure, including technology-enabled /assisted learning ecosystems, and appropriate student support systems such as counselling and career guidance services to optimize learning and promote overall learner development.

2.5.9. Put in place a system for mentorship of neighbouring institutions.

2.6 PROPOSED INITIATIVES

2.6.1. Curriculum Renewal to Introduce a Broad-Based Liberal Education

Target: The undergraduate and graduate programs are redesigned, and a broad-based liberal education is introduced to ensure the holistic development of all students.

a) Introduction of Multi/Inter-Disciplinary Liberal Arts Education

The undergraduate education programs will be redesigned to introduce multi/inter-disciplinary liberal education programs with a curriculum designed to develop broadly-useful capacities and important dispositions of human beings– intellectual, aesthetic, social, physical, emotional and moral – in an integrated manner.

The Indian concept of liberal arts education (as witnessed in Indian universities, such as Takshashila and Nalanda, the oldest universities in the world) has emerged as an important component of education in the modern day due to the changing learner characteristics, emerging curricular thrusts, and the rapidly changing employment landscape of the 21st century. A liberal arts education also emerges to be significant in the context of the efforts to prepare students to respond to the emerging Fourth Industrial Revolution that drives a major shift in employers' demand for skills, and more technology-assisted work.

A liberal and broad-based education will be accompanied by rigorous specialization in chosen disciplines or fields to develop deeper expertise in one or more subjects. Flexible curricular structures, pedagogical and learning assessment practices that will facilitate creative combinations of learning/disciplinary areas for students will constitute an important aspect of the undergraduate program. Thus, undergraduate education will be characterized by great flexibility in selection of courses (called majors, dual majors, or minors), as chosen by students, from across different disciplines and fields: arts, physical and life sciences, mathematics, social sciences and humanities, vocational and professional fields in order to develop deeper expertise in one or more subject areas. The programs would offer multiple exits and re-entry options.

A multidisciplinary and liberal approach to higher education will serve to enhance not only undergraduate programs but also graduate programs and research in HEIs. The multidisciplinary environments, the breaking of silos and the connection with local communities and industry will help greatly in making a research by faculty and graduate students more interdisciplinary and locally relevant. It will encourage collaboration across departments to tackle local issues relating to, e.g., clean water, energy, environmental sustainability, gender equality, preservation of endangered languages, preservation of local arts, etc.

Given the size of our higher education system coupled with limited financial resources and the variety of HEI's, it may not be viable to introduce liberal arts education in all HEIs simultaneously. Hence, the implementation modality will include adopting a hub and spoke model where a certain number of HEIs would be identified as the hub institutions and provided focused funding which can, in turn, develop a specified number of spoke institutions. Over some time, there will have a rapid multiplier effect that will cover all the HEIs. Key initiatives directed at transforming undergraduate and graduate education programs will include the following:

i. **Formulate a National Higher Education Qualifications Framework (October 2019 – March 2021):** A National Higher Education Qualifications Framework (NHEQF) that would facilitate the introduction of broad-based, flexible and multi-disciplinary undergraduate and graduate programs that offer multiple exits and re-entry options will be developed. The NHEQF will ensure consistency across institutions and equivalence across programs. In the case of vocational subjects, correspondence between the National Skills Qualifications Framework (NSQF) and the NHEQF will be established to enable equivalences and mobility. The NHEQF will help redesign the bachelor's degree programs that will include: a 4-year Bachelor of Liberal Arts (BLA) or Bachelor of Liberal Education (BLE) degree (or BLA/BLE with Research) consisting of broad-based liberal education together with rigorous specialisation in a chosen field or fields, with provision for appropriate certification, such as an advanced diploma in a discipline or field of study (including vocational and professional areas) after completing 2 years of study or a diploma after completing 1 year. The 3-year traditional B.A., B.Sc., and B.Voc. Degrees will continue to be offered by those institutions that wish to do so, but all Bachelor's degrees will gradually move towards taking a more comprehensive liberal education approach. The NHEQF will also provide HEIs with the flexibility to offer different designs of Master's degree programs, e.g., there may be a 2-year program with the second year devoted entirely to research, for those who have completed the 3-year undergraduate program; there could be an integrated 5-year Bachelor's/Master's program; and there could be a 1-year Master's program for students completing a 4-year BLA or BLE with Research.

ii. **Revise Learning Outcome-based Curriculum Framework (October 2019 – March 2021):** The Learning Outcomes-based Curriculum Framework (LOCF) developed by UGC will be revised to guide curriculum planning and development for the introduction of liberal arts education at the undergraduate and master's degree level. From 2019 to 24, the LOCF of 100 programs/courses will be revised.

iii. **Create a National Academic Credit Bank (April 2020 - September 2020):** To ensure flexibility in learner choices, the freedom to choose a variety of courses across various departments and also institutions is essential. Accordingly, learners will be allowed to acquire credits by opting for courses across departments' intra-University or even across different Universities, which will be accumulated in the proposed National Academic Credit Bank, thereby encouraging student mobility. Flexibility to acquire credits through different instructional modes of curricular transactions, such as regular, online, ODL will also be permitted. A National Academic Credit Bank will be created as early as possible to ensure a flexible undergraduate program.

iv. **Create/strengthen institutional structures needed for multi- and cross-disciplinarity in HEIs including professional education (April 2020 - March 2024):** The overall transformation of undergraduate education entails the creation of institutions offering courses and programs of study across the humanities and arts, social, physical and life sciences, mathematics, and sports, alongside vocational and professional fields. To enable liberal education to thrive, all higher education institutions will be converted into multidisciplinary institutions in a phased manner. Initiatives will be launched to create/strengthen departments such as Languages, Literature, Music, Philosophy, Indology and the study of India, Art, Dance, Theatre, Education, Statistics, Pure and Applied Sciences, Sociology, Economics, Sports, and other departments that are needed for a multidisciplinary education and environment at HEIs across the country. It is proposed to introduce flexible Bachelor's degree programs with multiple exits and re-

entry options; Introduce BLA or BLE with Research degree programs and Create Multi & Cross-disciplinary departments in HEIs covering 200 Universities and 10,500 colleges during 2019-2024. This can either be by creating new departments within existing HEIs or by creating institutional clusters of co-located institutions which can be colleges/universities. All professional education programs, including medical, legal, engineering, agricultural and teacher education, etc., must move towards more liberal education. The curricula for medical, legal, engineering and agriculture education, etc. will be renewed so that students can learn relevant topics relating to science, arts, humanities, and social sciences.

v. **Create departmental/institutional structures for multi- and cross-disciplinarity in teacher education programs (April 2020 - March 2024):** As teacher education requires multidisciplinary inputs, all programs for the initial professional preparation of teachers will be moved into multi-disciplinary higher education institutions in a phased manner. Currently, most teacher education institutions are stand-alone institutions. This has led to both intellectual and professional isolation of teacher education institutions and their faculty from the rest of the higher education system. All multidisciplinary universities as well as multidisciplinary colleges must aim to establish education departments which, aside from carrying out research in various aspects of education, will also offer the stage-specific 4-year integrated Bachelor of Education (B.Ed) programs, in collaboration with other departments such as psychology, philosophy, sociology, neuroscience, Indian languages, arts, history, and literature, science, mathematics etc. Further, all existing stand-alone teacher education institutions must aim to become multidisciplinary higher educational institutions. This would bring about a major transformation of teacher preparation to ensure high-quality training to give teacher trainees the multidisciplinary exposure and education. For this, selected multidisciplinary HEIs will be supported by the Central and state governments. The renewal of curricula for the teacher education programs (both at the Bachelor's and Master's degree levels) will be guided by the professional standards for teachers and teacher educators to be formulated jointly by NCTE, UGC, and universities.

vi. **Bridge Courses and Student Induction programs (April 2020 - March 2024):** To address the issue of inadequate learner preparedness, a 2-4 credit bridge course will be introduced in all undergraduate programs. Also, Student Induction Program will be organized to help new entrants in HEIs adjust and feel comfortable in the new environment, inculcate in them the ethos and culture of the institution, help them build bonds with other students and faculty members, and expose them to a sense of larger purpose and self-exploration. Students' Induction could cover a number of different aspects such as Socializing: meeting other new students, senior students, students union, Lectures by Eminent People; Associating: visits to University/college, visits to Dept./Branch/ Program of study & important places on campus, local area, city etc; Governing: rules and regulations, student support etc; and Experiencing: Subject lectures, study skills, small-group activities, physical activity, creative and performing arts, literary activities, universal human values, etc. From 2019 to 24, Bridge Courses in all Under Graduate Programs of 2/4 credits and Student Induction Program in 1200 institutions will be introduced.

vii. **Building institutional and faculty capacity to reinvigorate undergraduate education (April 2020 - March 2024):** The concept of broad-based Liberal Education and embedding it into different disciplines require the buy-in by the existing academic faculty as also the regulatory bodies. A substantial proportion of faculty will be oriented

to the proposed curricular reforms to gain their support for the smooth implementation of curriculum renewal initiatives for the introduction of strong liberal arts undergraduate education.

viii. **Create opportunities for internships, community engagement field-based learning (April 2020 - March 2024):** A four-month minimum mandatory internship program will be introduced in all undergraduate programs. Internships can be with State governments or local administration to study government schemes, with local industry as well as research internships with faculty /researchers at their own or other HEIs /research institutions. All HEIs will also create opportunities for community engagement by students, especially in services that make use of mechanisms for social engagement of students at the undergraduate level. These will be designed to give exposure to students to the pressing issues of the local community, State, and country. It is proposed to prepare guidelines for mandatory four months internships and community engagement and roll it out in all UG programs covering 2.5 lakh students in the five years.

ix. **Incentivise the renewal and implementation of the revised curriculum: (October 2019 - March 2021):** All curricula must be periodically (maximum in 5 years) reviewed and revised to improve on the basis of developments in the relevant fields, the experiences of the faculty and the students, and the track record of achievement of learning outcomes. Appropriate mechanisms, both at the HEI and system level, will be put in place to ensure that higher education curricula for all programs of study are reviewed and revised at least once in 3-5 years. Curriculum review/revision will become an integral part of institutional assessment and development. The quality of the curriculum, its improvement, the actual quality of classroom transaction, and the learning outcomes of the students will form an integral part of the Institutional Development Plan (IDP) of all HEIs. The IDPs will be used for assessment of the institution, its programs, and also of its faculty. The assessment of the HEI may include student evaluations, peer reviews, and other relevant mechanisms. The assessment of the institution may be like self-assessment for improvement or as part of the NAAC/NBA accreditation process in the Accreditation System and NIRF – Adequate weightage to be assigned by NAAC/NBA and NIRF. Further, all affiliated colleges should move towards gaining autonomy in the future, and progressively with support from the MHRD will move towards growing to become either universities or research institutions. Appropriate institutional mechanisms for periodic review/revision of curricula will be created in 200 Universities and 1000 colleges in a phased manner from 2019 to 2024.

DEVELOP LINKAGES BETWEEN SCHOOL EDUCATION AND HIGHER EDUCATION

Many of the issues affecting quality in higher education can be traced to the system's inability to tackle learning issues early in academic life. Hence, it is important to develop proper linkages between secondary and higher education. This would help learners to identify their aptitudes and make informed choices about their future course of study and career. Similarly, it will address the holistic development of cognitive, affective, and psychomotor domains of knowledge, which might help to reduce the over-dependence on tuitions and coaching. Coaching has grievously affected individual creativity and added to undesired stress by parents, teachers, and learners to accord undue and lopsided obsession with only a few 'desired' professions that acts an impediment to foundations of a strong liberal education. Another aspect is that the schooling system must help to create an enabling ecosystem that honours student diversity. This will help to reinforce recognizing diverse abilities and backgrounds and create inclusive learning spaces that

will make an easier transition to higher education. Higher education institutions must mentor schools, and faculty must also teach in secondary schools. Every University teacher must have some experience of a specified number of hours for school teaching, for their professional development. An institutional and systemic mechanism for dialogue between the two sub-sectors is critical for implementing educational reforms in a continuum.

2.6.2. Promoting Effective Pedagogies and Assessment Practices Towards Best Teaching & Learning

Target: Effective pedagogical practices, learning experiences, and assessment practices that promote the achievements of expected student outcomes are developed and introduced in selected HEIs (universities/colleges) within the next five years.

Improved learning by students requires effective pedagogical practices which determine the learning experiences that are provided to students enabling them to attain the defined education/learning outcomes. Providing stimulating learning experiences through effective pedagogical practices and learning assessment methods/procedures that are designed to move students decisively away from pure rote learning, and encourage learning experiences that promote conceptual understanding and the development of fundamental capacities and dispositions that help substantially in empowering students to take charge of their own learning, will constitute the major thrust of the curriculum renewal initiatives. Specific initiatives will include the following:

a) **Expand institutional structures to support strengthening capacity of faculty to use effective pedagogical approaches and design learning assessment methods/tools (October 2019 - March 2024)*:*** Faculty will be empowered and supported by the HEIs to innovate and adopt pedagogical approaches and learning assessment methods/procedures that help improve the overall teaching-learning process in all HEIs. To achieve this, a total of 100 additional Centres of Excellence (CoEs) / Teaching-Learning Centres (TLCs) under the National Mission on Teachers and Teaching to strengthen faculty to use multiple pedagogical approaches, develop assessment tools for multiple assessment approaches will be set up as a part of expanding institutional structures for conducting high quality training programs on effective teaching. Also, A National Academy for Teaching, Learning, and Leadership will be established which will coordinate and synergize with the CoEs & TLC to strengthen faculty capacity for improving the teaching-learning process and instil leadership skills in senior faculty. The Academy will also undertake activities that would help infuse respect for a teaching career and elevate the teaching profession, with a sense of creating a fraternity in the community**.** All these Centres will conduct a series of workshops to enable faculty to use multiple pedagogical practices that would involve: student participation and dialogue; relevant fieldwork and hands-on activities, facilitating student ownership of learning experiences; Seminars, symposia; Group and individual projects and practicums; ICT enabled teaching learning application, development of e-content and online content development; Cooperative and peer-supported activities; the application of theory and ideas; integration of field experiences, projects, practicum, and internship that help students gain significant exposure to field realities; and meaningful opportunities for social engagement. Adaptive learning to encourage customized learning to meet varying learning needs also needs to develop for which faculty have to be trained. Train faculty for Assessment for learning/development (formative assessment); moving towards a criterion-based grading system; moving away from high-stakes examinations and toward more continuous and comprehensive evaluation; and comprehensive assessment that

covers all aspects of learning and is designed to reflect learning experiences along with learning outcomes. During the period 2019-24, a National Academy for Teaching, Learning and Leadership and 100 additional CEOs will be established.

b) **Introduce multiple approaches to learning assessment (April 2020 - March 2024):** The examination system in higher education will be recast; evaluation will be guided by curricular objectives and overarching educational goals, including defined program learning outcomes and expected graduate attributes. Faculty will be supported, trained, and empowered to innovate and use multiple approaches to learning assessment that help assess student learning outcomes in all learning areas/domains. A range of tools for assessment, e.g., peer and self-assessment, portfolios, assignments, projects, presentations, dissertations, adaptive testing; examinations, open book examinations; examinations on demand; modular certification, etc. will be used to assess the learning outcomes. The criteria and rubrics for assessment to be determined collaboratively by the faculty and shared with students.

c) **Energizing classroom–learner feedback by undertaking periodical student satisfaction survey to assess the current status in regard to teaching effectiveness/excellence (October 2019 - March 2024)*:*** The program envisages a robust form of assessment of teaching effectiveness including student feedback and peer assessment, that provide feedback to faculty to enable them to improve their teaching quality and effectiveness continually. A Teaching Excellence and Student Outcomes Framework on the lines of some international models will be developed for conducting student satisfaction surveys. Periodic student satisfaction surveys to obtain student feedback and assess the current status regarding teaching effectiveness/excellence in each HEI will be conducted, and a strategic plan for achieving teaching excellence will be developed. Some of the components that may be assessed may include: student satisfaction with teaching on their courses/programs, with academic support, and with learning assessment and feedback; student completion, learning gains, and graduation; the proportion of graduates going on to employment or further study; and the proportions of graduates going on to highly skilled employment or further study. Based on the findings of the student satisfaction surveys conducted by HEIs, a strategic plan for achieving teaching excellence will be developed, and measures required for enhancing teaching effectiveness/excellence will be initiated. All NAAC accredited HEIs with 2.0 weightage/grade and above will undertake student satisfaction survey to assess teaching effectiveness/excellence once in every two years. Institutions with less than 2.0 weightage /grade will go for mentoring.

d) **Launching of a National Tutor's Program (NTP) (April 2020 - March 2024)*:*** During the period 2019-24, some 20,000 Tutors will be identified to work under the NTP. Professionals from various fields and retired faculty who are willing to provide their academic services voluntarily to HEIs in nearby geographical vicinity and who meet some stipulated eligibility criteria will be encouraged to join as a National Tutor. Also, a dossier of Emeritus Faculties will be compiled who are senior academicians, scientists, educationists, retired government officials who are academically fit and willing to contribute to the HEIs in any appropriate manner will be drawn up. Mechanisms to induct retired Defence personnel into the teaching system will be worked out, subject to certain stipulated eligibility criteria. Equally important is to devise a scheme within the National Tutors Programs to bring back women who have had a break in their career to reconnect to society by providing avenues for teaching assignments by linking them to geographically nearby HEIs/ CoEs/ TLCs. This would ensure that the intellectual soft power gained by these bright women are harnessed and leveraged for teaching/tutoring.

e) **Creating a Pool of 1000 Pedagogic Experts**: A cadre of pedagogic experts will be created to support faculty development initiatives. Initially, 1000 faculty will be identified

who will undergo 3-weeks foreign training to enable them to acquire knowledge and skills relating to some of the global best teaching-learning practices. They will be master trainers who in turn are expected to train 50,000 faculty over the five years.

2.6.3. Professional Capacity Building and Continuous Professional Development Of Faculty

Faculty development initiatives will constitute an important strategy for achieving faculty excellence. The thrust of faculty development initiatives will be to enable all faculty to acquire specific competencies that help improve their work performance, particularly teaching effectiveness, and become more effective at facilitating student learning; learn about new

> **Target:** A cadre of empowered and diverse faculty with high competence and deep commitment to achieving excellence in teaching, research, and scholarship is made available in all HEIs in a phased manner.

fields/frontiers of knowledge and apply new instructional delivery models, technologies and pedagogies to promote improved student learning outcomes and enhanced teaching effectiveness and excellence in research and engaged scholarship. The overall requirement of the country, in terms of Human Resources of the required quality, is very large. However, the present initiative will create a Human seed Resource. It is envisaged that the viral multiplier effect can be initiated by using the Human seed Resource for training further additional capacity building, through disruptive innovations like ARPIT, LEAP, etc. Specific initiatives will include the following:

a) **Fill up vacancies of full-time faculty and Induct adjunct and visiting faculty (April 2020 - March 2024):** The main thrust will be to ensure that faculty vacancies at any point of time do not exceed 10% of the sanctioned strength in an HEI. The present system of faculty recruitment will be revamped. The National Eligibility Test will be overhauled in such a way as to assess aptitude for teaching and teaching ability for those who intend to pursue a career in teaching and identify talent that goes for research. Also, a system of regular recruitment with a set yearly calendar will be put in place so that it becomes an established annual practice. However, the present autonomy of recruiting faculty based on established norms must not be curtailed. In the modified scenario of liberal education, the background required by the faculty candidate so that he/she can be re-oriented towards the liberal education undergraduate program needs to be worked out. Further, relaxation of Recruitment Rules such as doctoral degree requirements can be exercised by the university, depending on the experience of the individual.
b) Qualified personnel from industry and other relevant professions will be identified by each HEI to act as an adjunct and visiting faculty. An adequate number of adjunct/visiting faculties will be recruited and deployed to teach relevant programs of study. The adjunct/visiting faculty will be actively involved in the planning and implementation of teaching programs of the HEI. Teaching assistantships will be introduced at the entry-level cadre by creating positions of Academic Assistants and Academic Associates, who can be accorded appropriate weight while factoring faculty-student ratios. The Academic Assistant will be considered equivalent to 0.25 faculty while the Academic Associate will be treated as 0.5 faculty. All fresh PhD entrants, irrespective of discipline, will be required to have taken at least 8-credit courses in teaching/ education/ pedagogy related to their chosen PhD subject, during their doctoral training period. Exposure to pedagogic practices, designing curriculum, credible evaluation systems, and so on, is desirable since many research scholars will go on to become faculty. They must also have a minimum number of hours of actual teaching experience

gathered through teaching assistantships and other means. PhD programs at universities around the country must be reoriented for this purpose. Opportunities for PhD students to assist faculty as teaching assistants must be created as part of all PhD programs. Pilot programs with teaching fellowship to create a talent pool of teaching resources can also be explored. To deal with the current faculty crunch, a one-time catch-up grant will be provided for filling up vacancies of full-time faculty, inducting adjunct and visiting faculty in 400 universities/autonomous colleges. The eligibility norms for teaching faculty in HEIs need to be aligned with the growing interdisciplinary flavour in UG/PG/PhD programs.

c) **Develop professional standards for faculty in HEIs (October 2019 - March 2021):** Professional standards for faculty will be formulated to guide faculty development initiatives focused on the core functions of teaching, research, and scholarship. The professional standards will include both core standards that are common to all faculty and professional standards that apply to discipline/domain-specific faculty. Professional standards will also be formulated for faculty at different levels of their career (early faculty, proficient faculty, expert faculty and master faculty) and for different categories of faculty. The professional standards will be reviewed and revised in 2023, and after that every five years, based on empirical analysis of the efficacy of the system. During the period 2019-21, professional standards will be developed for 100 disciplines.

d) **Expand institutional structures for organising Faculty Induction Programs (FIPs) and train newly appointed Assistant Professors (April 2020 - March 2024):** All newly recruited Assistant Professors recruited during the last 5-6 years will be given opportunities for participating in FIPs to provide generic pedagogic skills in curriculum development, teaching-learning strategies and assessment, including ICT based instructional methods and to instil professionalism in them. From 2019 to 24, FIPs to cover 6 lakh newly recruited Assistant Professors through 400 identified institutions under UGC &MHRD.

e) **Expand institutional structures for organizing programs aimed at continuous professional development of faculty (April 2020 - March 2024)*:*** The current faculty development initiatives are largely training-centred. New approaches to faculty development may include: Technology use and integration for ensuring annual refresher training of faculty; Early tenure mentoring involving experienced academics/ specialists; Creating subject-based networks; Building a repository of curricular materials and learning resources; Providing support for research; Ensuring opportunities for participation in seminars/conferences (national and international), etc. While the expansion of refresher programs in regular classroom mode can still be limited in its coverage, online refresher programs through digital platforms such as ARPIT-SWAYAM can be made a regular feature where the training modules can be prepared by the global and national best-ranked institutions. This will ensure excellence in training. The approach will be to ensure that opportunities for continuous professional development are made available to all faculty members at least once in a year. For the period between 2019-24, refresher programs for the continuous professional development of 1, 20,000 faculties in HEIs to cover 6, 00,000 over five years will be organized.

A Blended Mode of Massive Teacher Training

- The training program of IIT Bombay uses a blend of synchronous and asynchronous learning methods. The team connects with its Remote Centres (RCs) and gives instructions on how to use Spoken Tutorials for learning. There are more than 550 RCs. About 100 to 200 RCs participate in such training programs, voluntarily. These Centres were established under the Train 10,000 Teachers. Coordinators in each Centre, knowledgeable about the Spoken Tutorial method of learning, help the participants in their Centres, who self-learn from Spoken Tutorials.

- Spoken Tutorials are 10-minute-long audio-video tutorials in the general area of IT skills and other skills, available free of cost to everyone.
- As Spoken Tutorials are created for self-learning, participants can indeed learn on their own. As the spoken part is dubbed into all of our 22 languages, this method is accessible to those who are not fluent in English, especially teachers of rural schools and colleges.
- Lack of Internet does not create any problems in using Spoken Tutorials. Questions of participants not explained in Spoken Tutorials can be posted in the Spoken Tutorial Forum.
- Spoken Tutorial is an award-winning educational method using the video-conferencing method and the A-VIEW software that has helped train a large number of teachers.

f) **Incentivize faculty excellence through merit-based tenure-track and career management, promotion, and salary structure (October 2019 - March 2024):** A merit- and performance-based tenure (permanent employment) track system, promotion, with multiple salary levels within each faculty rank will be institutionalized to incentivize and recognize excellent and committed faculty. Under the tenure-track systems, newly recruited faculty will be on a three-year probationary/tenure track period followed by a performance-based confirmation. A system of multiple parameters for proper assessment of the performance of faculty will be developed. This will include peer reviews, student reviews, innovations in teaching/pedagogical practices, quality and impact of research, professional development activities, and other forms of service to the institution and the community.

g) **Build capacity of faculty to take up academic leadership positions (April 2020 – March 2024)*:*** Outstanding faculty with demonstrated leadership and management skills would be identified and trained over time to take on important academic leadership positions. *The existing career path will be revised to allow opportunities for taking up leadership roles and participate in leadership development programs on the lines of Leadership for Academicians Program (LEAP) to cover 400 faculties per year to create a pool of 2000 potential academic leaders in the period of 2019-24.*

2.6.4. Upgrade Academic Infrastructure and Upgrade Technology Enabled/Assisted Learning Ecosystems

Target: HEIs, which are deficient in terms of academic infrastructure, is equipped with facilities, including technology-enabled/assisted learning ecosystem, and student support systems are improved to optimize learning and promote overall learner development.

To improve teaching-learning in all HEIs, it is necessary to ensure that all HEIs have the state-of-the-art academic infrastructure, including technology-enabled/assisted learning ecosystem that is required for effective organization of teaching-learning activities with special focus on Blocks/districts which have GERs below the national average. Specific initiatives will include the following:

a) **Upgrade academic infrastructure/facilities (April 2020 – March 2024):** An action plan will be prepared to upgrade academic facilities/infrastructure, including technology-enabled/assisted learning ecosystem, in each identified HEI. Which would include creation of video-based classes, and infrastructure for blended learning modes, online learning etc.; and other academic infrastructure such as library, laboratories etc.; infrastructure for the differently-abled students; facilities/infrastructure required for faculty, facilities/infrastructure for promoting sports and wellness and arts, Financial support will be made available to selected HEIs to improve academic facilities required for effective organization of teaching-learning activities.

b) **Improve student support systems (April 2020 – March 2024):** Financial support will also be made available to selected HEIs to improve student support systems that are required to optimize learning and promote overall learner development. Students from socio-economically disadvantaged backgrounds will be supported with necessary learning resources to enable them to complete undergraduate and graduate education successfully. Universities and colleges will be encouraged to make available high-quality academic support for educationally disadvantaged groups. Adequate funds and academic resources will be made available for this purpose. An appropriate mechanism will be put in place to make available counselling services in all HEIs. Also, each HEI will help students through placement assistance and career guidance to help them decide on their occupational choices, facilitate processes to identify employment opportunities, and set up interactions with potential employers. An efficient mechanism for grievance handling/redressal will also be created or upgraded. Each HEI will endeavour to create systems and processes that are required to ensure students' physical health and emotional wellness. Facilities for physical and emotional health support for students such as medical care and treatment in cases of illness or distress will be made available. Each HEI will also set up strong mentoring programs by faculty along with peer support programs.

c) **Collect data to assess academic infrastructure/facility-related deficiencies (October 2019 – March 2020):** Currently, there is a data deficit relating to the status regarding the availability of academic infrastructure in HEIs. It is proposed to obtain and collate information from State governments regarding g number of low performing Universities / & unaccredited colleges in each State/UT to assess the adequacy of infrastructure and academic facilities available in HEIs.

   Based on data, all HEIs will be required to prepare the Institutional Development Plan for upgrading academic infrastructure/facilities, including facilities for technology-enabled/assisted learning, and student support systems and faculty infrastructure. A Tripartite MoU with the condition of one-time funding subject to the adoption of reforms agenda under EQUIP will be signed. The provision of financial support to individual institutions will be based on two criteria /models namely, for financing low performing Universities and un-accredited colleges: a one- time catch up grant of Rs 5 crore per university and Rs. 1 cr. per college will be provided to 150 Universities & 5000 colleges.

2.6.5. Mentorship of Neighbouring Institutions *(*April 2020 – March 2024)

Higher Education Institutions (Universities, colleges) within a specified geographical area will be grouped into to form an Institutional Cluster comprising 5-10 HEIs. Institutional Clusters for offering liberal undergraduate multi-disciplinary courses as well as for sharing of common physical and academic resources will be established by identifying educational institutions that are co-located based on information from states. The specific programs of mentoring with quantifiable performance goals for mentoring as well as mentee institutions, will be drafted. Such goals will be reviewed every quarter. One or two high performing HEIs within an institutional cluster will be assigned the task of mentoring the neighbouring institutions to improve the teaching-learning process in these institutions. A mechanism for Joint Mentoring by academic institutions in collaboration with industry will have beneficial results both for the mentee institution as well as the industry. The mentor institutions will support other institutions using the capacities relevant to curriculum renewal, faculty development, etc. that they may have, including offering physical resources such as laboratories, books, playgrounds, etc. for faculty development programs. The Mentor institutes can introduce short term teaching apprenticeship system. Each mentor institution will be functionally linked to other neighbouring Mentee institutions within the institutional cluster. Mentor and Mentee institutions will be identified

based on defined criteria and funds will be provided to the mentor institutions, thereby institutionalizing mentoring. In choosing mentor institutions, there should be no discrimination between public & private HEIs as mentorship is for a larger public cause and progressive private HEIs are also delivering huge public benefits.

2.7 MONITORING AND EVALUATION (October 2019 - March 2024)

EQUIP is a major transformative exercise that will change the entire ecosystem of higher education. Monitoring will be a composite exercise where all the thrust areas will be reviewed in n holistic manner as there are close inter-linkages between them and impediments in implementing reforms in one area can decelerate proposed initiatives in another key area. The monitoring mechanism proposed is hence as an overarching mechanism. Also, given the disruptive nature of reforms that are needed on a vast landscape with a great deal of diversity, monitoring is more a handholding exercise that would help all agencies to work in close coordination to achieve the desired targets and outcomes in a time-bound manner. The review is more to address bottlenecks in implementation and make remedial interventions and effect mid-course corrections rather a negative audit exercise. A task force will be set up within the MHRD to support and oversee the implementation of different components of EQUIP. The details will be worked out later. Also, the following mechanisms will be put in place for monitoring and evaluation.

a) Conduct half- yearly Independent Joint Review missions;
b) Organize yearly review meetings involving all state-level stakeholders;
c) Develop a portal for dynamic review etc. - Operationalization of an online PMIS wherein progress under various interventions will be updated in the web portal by all the States/UTs every quarter;
d) Quarterly progress reports on key indicators and a more detailed half-yearly progress report from States to the MHRD, Government of India; Involvement of institutions of repute to make independent and regular field visits to monitor the r performance of States/UTs;
e) Evaluation studies to support the planning and management of EQUIP interventions.
f) The annual meeting of central and state-level personnel to review the progress of the tripartite MOU in assessing achievement of the program targets and identify course corrections, if any, required.

2.8 FINANCIAL REQUIREMENTS

The requirement of financial resources to undertake the massive reforms agenda through envisaged action plans /activities can be daunting, especially if all this has to be publicly funded. Innovative ways of financing need to be explored which among other things could be: Philanthropic - both individual and corporate; Provision of tax deduction; Matching funding from public + corporate; Public funded institutions to generate internal revenue, Alumni funding, etc. At the same time, financial resources through philanthropy and alumni must be treated as Extra Budgetary Resources.

The total projected costs for implementing the action plan in the five years (2019-24) is calculated as Rs. 36,429 crores.

The reforms agenda must be implemented holistically in tandem, and it must be emphasized that resource constraints must not curtail the priority action /activities, which will be a self-defeating exercise. The broad action Plan and year -wise projections are indicated in the consolidated implementation chart given below. The head –wise activity with financial and physical phasing is given in Table 2.1.

CONSOLIDATED IMPLEMENTATION CHART							
S. No.	**Action Plan/ Activity**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**Total Financial Cost Projection (In Rs. Cr)**
1	Curriculum Renewal, Effective Pedagogies And Assessment Practices Towards Best Teaching And Learning	1081	1167.25	1867	3266.25	5452	**12832.5**
2	Promoting Effective Pedagogies And Assessment Practices Towards Best Teaching & Learning	167	194	216	238	260	**1075**
3	Professional Capacity Building And Continuous Professional Development Of Faculty	2960.5	3106.3	3252.10	3397.90	3543.70	**16261**
4	Upgrade Academic Infrastructure And Upgrade Technology Enabled Learning Ecosystems	1150	1150	1150	1150	1150	**5750**
5	Mentorship of Neighbouring HEIs	100	100	100	100	100	**500**
6	Monitoring And Evaluation	2	2.10	2.20	2.30	2.40	**11**
	TOTAL	**5460.50**	**5719.65**	**6586.80**	**8154.45**	**10507.60**	**36429**

CHAPTER 3
GROUP 3: Promoting Excellence

3.1 BACKGROUND

To give a multipronged boost to the higher education system in India for it to be ranked among the global best, and to bring a transformational change in the system over the next five years, it is proposed to put together an action plan named, "Education Quality Upgradation and Inclusion Program (EQUIP)" for implementation between 2019-2024.

3.2 OBJECTIVE

Historically India had been a world leader in higher learning. Our universities, like Nalanda and Takshashila, were foremost learning centres of the world. The profound knowledge of these centres attracted scholars from around the globe. After these seats of learning ceased to exist, great universities of the western world came into being, marking the shift in knowledge production and dissemination from the East to the West which is illustrated by the table below.

Table 3.1 Universities in top 500 and 200 in the list of World Rankings

Country	QS Rankings		THE Rankings		Shanghai Rankings	
	upto 500	upto 200	upto 500	upto 200	upto 500	upto 200
United States	94	48	122	60	139	69
United Kingdom	51	29	57	29	39	21
Germany	29	12	44	23	36	14
Japan	17	9	13	2	16	7
China	21	7	14	7	62	15
Australia	25	9	28	9	23	9
France	17	5	21	4	19	8
Italy	12	4	33	3	15	1
South Korea	15	7	10	5	10	2
Russia	15	1	4	1	4	1
Canada	18	7	18	9	18	9
Spain	13	3	8	2	10	1
India	9	3	5	0	1	0
Brazil	5	1	2	0	6	1

We need to restore our rightful place and make our universities and colleges producers of knowledge for the world. In this endeavour, the government is committed to ensuring that our higher education institutions achieve the highest levels of global excellence in teaching and research. To do it, there is a need to have a focused scheme to promote excellence in Indian HEIs. Therefore, the objective of the Group is to suggest:

a) Facilitating pathways for Indian Institutions to attain global excellence
b) Transparent and easy systems for Identification
c) Automatic and flexible funding for promoting excellence

3.3 INITIATIVES FOR ESTABLISHING WORLD CLASS INSTITUTIONS IN INDIA

To improve excellence in higher education, the Government has taken several steps. These include launching of both centrally sponsored schemes like Rashtriya Uchchtar Shiksha Abhiyaan(RUSA) and targeted projects such as increasing the number of Institutions of National Importance, making international faculty available for short term (GIAN), a National Institutional Ranking Framework (to enable institutions to assess themselves and get motivated to improve), IMPRINT, SPARC, UAY, Study-in-India, SWAYAM, PMRF, etc. There are schemes of other Ministries / Departments for improving Excellence such as CoEs, SAIF, MoC, Indo-X Collaboration and Exchange, Vajra, etc. However, it is felt that, while these schemes would help in improving the quality of general education in the country, special and accelerated efforts are needed to establish institutions which are of really international standards. In this direction, Government approved Institutions of Eminence (IoE) scheme in the year 2017.

IoE Scheme: To establish ten World Class Institutions each in public and private sector in a reasonable time by providing an enabling regulatory environment that allows them to achieve the highest levels of global excellence in teaching and research.
To achieve the objective above, the following regulatory architecture was formulated by UGC:

- **a)** UGC (Declaration of Government Educational Institutions as Institutions of Eminence) Guidelines, 2017(For Public institutions)
- **b)** UGC (Institutions of Eminence Deemed to be Universities) Regulations, 2017(For Private Institutions)

As per the Regulations, an Empowered Expert Committee (EEC) was constituted consisting four eminent persons to select Institutions of Eminence which would be governed by above guidelines and Regulations apart from their parent act by which they have been established. Under the scheme, financial assistance up to Rs 1000 Crore for each public institution is provided. Till date six (3 Public and 3 Private) institutions have been selected as IoE. Remaining 14 are still to be announced.

3.4. Areas of Focus for Indian HEIs to target Global Excellence and Higher Rankings would include:

(a) Academics and Infrastructure
(b) Internationalization & World Class Collaborations
(c) High-Quality Research & Citations
(d) Academic and Employment Reputation, Impact and Outreach
(e) Larger Faculty-Equivalent Teaching & Research Team
(f) Resource Generation and Industry Interaction
(g) Innovation and Entrepreneurship

The following aspects are important considerations:

1. Academic Reputation

a) Quality of Teaching
b) Quality of Research
c) Doctorate-to-bachelor's ratio
d) Doctorate awarded to academic staff ratio
e) Institutional Income
f) Research Income
g) International collaboration

h) Fields Medals by alumni and faculty

i) Count of faculty awards, honours, and prizes

2. **Employer Reputation**
   a) Focus on producing effective and innovative graduates for the employment market
   b) Linkage with Industry
3. **Faculty Students Ratio**
   a) Focus on faculty/student ratio to be 1:10
4. **International Students Ratio**
   a) Focus on internationalization by admitting more international students, specifically from neighbouring countries.
5. **International Faculty Ratio**
   a) Focus on internationalization by hiring more foreign faculty from all over the world.
6. **Innovation and Entrepreneurship**
   a) Focused funding for innovation and entrepreneurship
7. **Individual Performance**
   a) Special drive to hire extraordinary faculty and students across the country and world

3.5 STRATEGIES TO IMPROVE EXCELLENCE / RANKING PARAMETERS

a) Minimum Standards for high-quality infrastructure, Academics, Research, Amenities, Industry Connect, Innovation & Entrepreneurship.
b) International Quality Outcomes: Global Collaborations, Programs, Projects, Off-shore Footprint, Innovation, Industry
c) Enablement through Modification of Rules and Regulations for more Autonomy and Flexibility
d) Circular Ecosystem for Promotion of Excellence: New Instruments and Incentives
e) Management through Definition of Metrics, Indices, Payback along with National and Global Mentoring / Facilitation Schemes for Achieving Goals
f) Funding and Incentives to enable reaching targets and increase the catchment area of funding beyond government
g) Nationally Enhance Reputation with Stakeholders, Visibility with Students, Enable Global Collaborations

3.6 MINIMUM STANDARDS AND CIRCULAR ECOSYSTEM FOR PROMOTING EXCELLENCE

3.6.1 Ensuring Minimum Standards at all levels:

a) Academic Classrooms and Teaching Laboratories
b) Research Laboratories, Centres of Excellence, Off-shore Centres
c) Campus and Student Infrastructure
d) Innovation and Entrepreneurship System
e) Benchmarked Teaching-Learning Systems
f) Modern Classroom Teaching and Support Beyond
g) Digital Platforms, Library, Peer Assistance
h) Development of International Quality Pedagogical Material
i) Strong Outreach Programs to National and International Audiences
j) High-Quality Research Outcomes
k) Clearly defined goals for research dissemination, both qualitatively and quantitatively
l) Benchmarks for Intellectual Property Creation, Ownership, Conversion to Wealth / Entrepreneurship

m) Guidelines for National and International Collaborations with Top / Peer Institutions
n) Meeting Adequate People Ratios
o) Base Faculty: Student, UG:PG: PhD: PDF, National: International, Graduation: Faculty, Employment Ratio
p) Templates to be Created for the Above for Graded Evaluation

3.62. Creation of Circular Ecosystem for Regenerative Growth

a) Continue and Enhance Current Schemes of GIAN, SPARC, IMPRINT, UAY, Study in India, etc. However, consolidate these for selected Institutes concerning the Ranking Goals and Areas of Focus.
b) International India-Global Challenge R&D Program to solve key world and Indian problems in key Technology and Social Convergence Impact Areas
c) Niche Multi-Institutional Study in India Program to get the experience of more than one top Indian Institutions for a single degree at PG and PhD Level
d) Multi-Institutional Global Centres of Excellence (Cluster Facility) where many top Indian Institutions combine to work jointly on key emerging domains and allow internationalization including Off-Shore Centres, Research Parks
e) Create National Digital Platforms for Knowledge Creation in Key Areas to Teach and Interact with the World using best of talent
f) Fund Industry-Academia-Alumni- Innovation-Network as a key driver for new research
g) Allow International Faculty and Students to get salary and scholarships from Govt. funds.
h) Allow Flexibility of Admissions to bright students beyond stipulated national examinations
i) Allow Joint / Twinned International Programs including degree programs where the industry can participate
j) Flexibility of Faculty / Faculty-Equivalent (Post-Doc) Cadre Structure with separate major roles:- Teaching, Research
k) Practice along with the flexibility of salary and incentives
l) Allow Medical, Architecture, Management, Law and other Programs in chosen Institutions and enable New Flexible Academic Programs
m) Define a Doctoral / Post-Doctoral Degree Program and make it Internationally applicable without the need for permanent/long term stay in Institutions and allow them to collaborate from Industry
n) Innovation and Entrepreneurship enablement targeting new programs at all levels:

3.7 IMPLEMENTATION PLAN

3.7.1 Selection of Institutions:

The objective is to enhance the excellence of Indian HEIs and thereby to suggest pathways for Indian Institutions to reach global top-200 / Excellence. To attain Excellence, it is proposed to keep a catchment of 40-50 Institutions to which special incentives, autonomy would be provided. Selection criteria for selecting these Institutions are proposed as below:

a) Criteria 1: Institutions of Eminence:

Since the Government has already approved the IoE scheme, the selections of Institutions made under the scheme shall automatically be part of the catchment. Six Institutions (3 Public and 3 Private) which has already been declared as IOE will fall in this criteria. Any further declaration of IOE shall automatically be a part of this catchment. A maximum of 20 Institutions (10 Public and 10 Private) can be part of this

catchment as per the present approved scheme. It is proposed that the Government may increase this number to 30 (15 Public and 15 Private).

b) Criteria 2: Institutions/Universities with top 1000 global rankings (QS, THE, Shanghai)

The scheme aims to bring Indian HEIs in the top 200 of world rankings. Those HEIs which are in top 1000 of any of the three world rankings (QS, THE, Shanghai) are proposed to be a part of this catchment. As per this criterion total numbers of HEIs in this catchment are 37 (32 Public and 5 Private).

c) Criteria 3: Institutions in NIRF (Top 40), NAAC (3.51 &above) and University with Potential for Excellence

If any Institutions figures in any two of the list of top 40 of overall NIRF Rankings, NAAC score of 3.51 and above and UPE list of UGC shall be part of the catchment. As per criteria 5 Institutions (All Public) falls under this catchment.

Institutions under criteria I, II, and III shall be called as catchment I, II, and III Institutions. As per the above three criteria, a total of 48 Institutions forms part of the entire catchment and shall be entitled to incentives provided under the scheme. Since there is no subjectivity involved in the selection, there is no requirement of forming a special body/committee for selection of these institutions. The Ministry shall do the Orders for Institutions falling under different category on the advice of UGC. Any addition and deletion in the list shall be done every year following the same procedure. This should be done in the Ist quarter of the financial year, i.e. by the 31st of May.

3.7.2 Execution Plan:

There is no fixed path to become a world-class institution, and therefore it is proposed that each institution should have their specific action and implementation plan for improving their excellence/world ranking based on their strengths and weaknesses keeping in view the various parameters their weight in world rankings. The following steps are suggested for implementation of the scheme:

a) Each Institute to have a dedicated cell which will make a practical and implementable action plan. The action plan should contain a yearly plan and a five-year plan.

b) The Action plan should be approved by the Board of respective institutions.

c) The Action Plan should be submitted to the Monitoring and Mentoring Committee, which will finalize the action plan in consultation with the institute.

d) Based on the finalized action plan, an MOU will be signed between Monitoring and Mentoring Committee and the Institute. This MOU will also have measurable parameters for monitoring. For Public Institutions, there should be explicit mention of purpose for which the funds are to be provided.

e) The Monitoring and Mentoring Committee will evaluate the performance of the institutions as per their action plan and grade them. Two consecutive poor gradings to institutions will make that Institution eligible for coming out of the scheme and withdrawal of all incentives and autonomy provided under the scheme.

f) The Monitoring and Mentoring Committee will submit a yearly report to the Government on the performance of the scheme and can also suggest measures to be taken by the Government for improvement.

3.8 INCENTIVES TO BE PROVIDED

3.8.1 Catchment I Institutions: These are IOEs Institutions. IoE Regulations and Guidelines of UGC have already provided incentives and Autonomy to these

Institutions. Financial Assistance up to Rs 1000 crore in five years is also provided to public IoEs.

3.8.2 Catchment II Institutions: Autonomy provided to IoE is proposed to be extended to these Institutions. Financial assistance up to Rs 500 Cr is proposed to be provided to each of these institutions in a period of five years.

3.8.3 Catchment II Institutions: Autonomy provided to IoE is proposed to be extended to these Institutions. Financial assistance up to Rs 250 Cr is proposed to be provided to each of these institutions in a period of five years.

It is proposed to make all private Institutions of all catchments eligible for all Government Schemes. Public Institutions shall be given preferential treatments in all the Government schemes.

3.9 FINANCIAL REQUIREMENTS

Assistance to the top public/public aided institutions for improving the ranking		
	Details	**Total cost**
IoE	30 institutions @Rs.1000 Cr for 15 institutions	15000
Top 500/1000 global ranks	6 public institutions @ Rs.500 Cr	3000
Indian ranking institutions not in global rankings	15 institutions @ Rs. 250 Cr	3750
Circular ecosystem	Internationalisation grants on a competitive basis for 4 years - flexi fund	3400
		25150

(Note1: Financial Assistance shall not be provided for the years in which they are not meeting the eligibility criteria for selection.
Note2: Financial Assistance shall not be more than 70 % for any item for which they are seeking funds.)

3.10. Mentoring and Monitoring Body:

At Central level:
There shall be Mentoring and Monitoring Body consisting of three to five eminent persons appointed for a period of three to five years. They will be reputed and credible individuals who have contributed to education, Industry, Governance, Policymakers, etc. Mentoring and Monitoring Body should have subcommittees comprising of national and international domain experts and strategists. There would be some permanent staff to support Mentoring and Monitoring Body.

At the Institutional level:
Each selected Institutions also to have a Monitoring body of professionals for monitoring and advising them on various parameters required for excellence.

Functions of Mentoring and Monitoring Body:

- Shall mentor and monitor the Institutions selected for academic Excellence under the scheme.
- Will analyze the various parameters involved in world rankings.
- Will analyze the strength and weakness of the Institution, especially with respect to parameters of world rankings.
- Will help in preparing an implementable Institute specific action plan / Strategy for improvement on various parameters.
- Will monitor the progress on each parameter as per the action plan on a six-monthly basis.

- Will suggest measures if progress is not as per the action plan.
- Will also suggest to Govt for amendment in any Regulations / Guidelines for these institutions for improvement in world rankings.

3.11. Suggested Parameters to be used by Mentoring and Monitoring Body for finalizing Action Plan for each selected HEIs:

- SWOT Analysis for the Institutions
- Goal Setting at macro and micro levels
- Monitoring Targets and developing Projections
- Identifying Gaps and Facilitating Solutions and Corrective Actions
- Suggesting Strategies and Developing Instruments
- Advising on Executive Decisions and Actions
- Facilitating with National Agencies
- Developing Incentives and Penalties
- Annual Review
- Enhance Reputation among Academic, Research and Outreach Stakeholders
- Improve Visibility with Students and Potential Top Qualifiers
- Projection of Quality Programmes, Achievements and Perception Management
- Networking with various Collaborators, Employment and Ranking Stakeholders
- Develop Strong International Visibility
- Use of Alumni
- Development of Indices and a Platform for Regular and Transparent Monitoring

3.12. Suggested Parameters to be used by Mentoring and Monitoring Body for Monitoring:

- Use All Base Data for QS, THE, WUR, NIRF appropriately
- Develop Minimum Requirements Standards Template Related Data for those, not in Base Data
- Indices and Metrics: Combine Three Aspects
- Standard Indices: Based on QS, THE, WUR, NIRF
- Relativized (World, Asia, India) Quality Indices Based on
- Minimum Standards Templates
- Metrics Chosen from QS, THE, WUR, NIRF
- National Priority Indices: To be developed based on identified National Missions, Strategic Interests, Soft Power
- Measure Absolute and Relative Improvement

3.13. Suggested Methods for Monitoring:

- Development of a Digital Platform for Monitoring based on Institutional Data Population and Automatic Harvesting
- Provide a Website with Public and Private Access
- A Payback Evaluation Scheme to help MHRD, Government and other Stakeholders to evaluate the various kinds of Paybacks in terms of overall outcomes of the Scheme on a regular basis

CHAPTER 4

EQUIP Group 4: Governance Reforms

4.1 Group 4 on Governance Reforms was constituted to look into the following aspects:

4.1.1. Internal Governance in University

- **a)** ERP implementation & de-bureaucratisation process
- **b)** Training the non-academic staff
- **c)** Decentralization at the department/school level
- **d)** Institution's academic bodies- minimum qualifications

4.1.2. Affiliation reforms – autonomy for the best performing colleges

4.1.3. Process for selection of VCs/Deans/Registrars/FOs

4.1.4. Leadership training – handbooks on processes for all

4.1.5. Grievance Redressal Systems

4.2 It was felt that the governance of the higher education system would include two components:

(a) Sectoral Governance by the Governments and the Regulating Agencies and
(b) Internal Governance of the Universities

4.2.1 Sectoral Governance by the Governments and the Regulating Agencies

The issues concerning Sectoral Governance are lack of autonomy to the Higher Education Institutions, weak quality assurance mechanisms, funding not linked to the performance of the institutions, absence of robust mechanism for appointment of Vice Chancellors, establishment of universities for populist reasons, over-centralisation and micro-management of universities by Government and regulatory bodies, minimal role of State Councils of Higher Education as a buffer institution, and overlapping role of UGC, AICTE and various Statutory Professional Councils. The Group recommended that there is a need to address the above issues through various means. The specific recommendation was as follows:

1. **Setting up of a Higher Education Commission of India:**
   HECI is envisaged is a regulatory body to promote the quality and standards of Higher Education by merging the UGC and the AICTE. The HECI will primarily focus on academic and quality matters duly ensuring learning outcomes, mentoring of institutions, training of teachers/academic administrators, promote education through ICT, ensuring inclusion of the weaker sections of the society and end of inspection raj. The HECI will promote autonomy to good performing Higher Educational Institutions and award them powers to confer degrees. Disbursal of the fund shall be done through SPV (Special Purpose Vehicle). The HECI shall provide for comprehensive and holistic growth of Higher Education and research in a competitive global environment.

b) Model Act for State Public Universities: It was proposed that all the issues of university governance can be addressed through a Model Act which can indicate the governance structure of a university, composition of various bodies, qualification and appointment of various officers of the university, composition, qualification, and other norms for selection of members of Search Committees for appointment of Vice Chancellors, tenure of VC, selection process for VC etc. The MODEL ACT may act as a guiding principle for the universities to revise their existing Acts to make them more progressive. A copy of the Model Act is enclosed in Annexure.

c) **Greater Participation of State Councils for Higher Education in managing State Higher Education Institutions:** At present about 30 states have constituted State Councils for Higher Education to manage State Higher Education Institutions but many of these Councils are not functioning properly to act as a buffer institution between the Central Government - State Government - State Universities – Colleges in the State. UGC may issue guidelines for greater participation of State Councils of Higher Education to enable them to act as an effective body to ensure equality of higher education in the concerned State and to assess the funds' requirements of every State keeping in view the considerations of merit as well as inclusivity. The UGC may be given a timeline of about two months to formulate these guidelines.

d) **Establishing New Universities:** It has been seen that the universities are announced and created for various reasons. The Group felt that the creation of universities should be based on need and justification. Therefore, UGC in the next three months may bring out guidelines for establishing new universities for the use of the Central and the State Government to ensure that new universities are established based on felt need only.

e) **Affiliation Norms**: The Group was concerned about the baggage of large number of affiliating colleges with a University. The Group felt that the affiliation followed in the Indian Higher Education Institutions is slowly losing its relevance. The number of affiliated colleges to certain universities goes as high as 1000, which are very difficult to manage and regulate. It was felt that the number of affiliating colleges to any university might not exceed 100. Also, the Group was in favour of the abolition of affiliation system, altogether, which is at present a British legacy and is prevalent in very few countries like India, Pakistan, Bangladesh, and Sri Lanka. This may involve amendment in the UGC Act as it will entail granting degree giving powers to colleges. However, until it is done, the UGC may revisit the norms for affiliation of colleges with universities while ensuring that all 40,000 colleges come under the purview of UGC to ensure uniformity of standards. A tangible and organic relationship between universities and colleges should exist to ensure that the university acts as a mentor, philosopher, and guide for the affiliated colleges and acts as a partner for improving the quality.

f) **Increasing the Pool of Autonomous Colleges:** The Group was aware of the fact that the UGC has recently revised the guidelines for autonomous colleges and is promoting granting of autonomy as a proactive measure. The Group felt that this should continue and the number of autonomous colleges should enhance further. It was also felt that the good autonomous colleges with high NAAC rating might be allowed to award degrees for which a suitable amendment in the UGC Act may be required.

g) **Mentoring Colleges**: The Group noted with appreciation that the UGC has recently launched a scheme called PARAMARSH whereby the colleges ranked highly by NAAC shall be mentoring the colleges who are not yet accredited. The UGC is also in the process of preparing a mentor-mentee list to put it into operation. The Group recommended that this may be further expedited so that more and more colleges come under the fold of accreditation.

4.2.2 Internal Governance of the Universities

As far as the Internal Governance of the universities is concerned, it needs to be more transparent, decentralized, autonomous, and accountable. A flexible pattern of governance, which is responsive to the changing needs of society, global trends, and knowledge, can be a powerful factor in accelerating progress. In the wake of the internationalization of education, coupled with globalization and competition, the higher educational institutes need to be managed more professionally. The traditional university administration being run with 19th-century tools have to be replaced with modern management techniques with qualified, professionally trained, and pro-active

administrators suited for the fast-changing world. Administrative machinery, which is not equipped with the necessary skills, knowledge, and attitude and is not in harmony with the needs of the progress, can retard the pace of development of a university. However, it was felt that the governance issues were different for various types of HEIs like INIs, CUs, SUs, DUs, and SPUs. Therefore, the same set of norms may not apply to all. The Group recommended the following:

a) **Suitable Adoption of Model Act:**
The Group recommended that all the universities should suitably adopt the Model Act proposed by the Group so that all the recent developments in the field of higher education are taken care of including autonomous colleges, investment by the university, university industrial linkage, foreign collaboration, research park, incubation centre, etc. The powers in the university shall not remain concentrated with the Vice Chancellor and shall be decentralized to expedite the speed of work. The appointments in the universities should be transparent and based on merit. The Vice-Chancellor shall ensure that the departmental heads are also given financial, academic, and administrative powers.

b) **Establishment of Human Resource Management Systems:**
The Group also felt that unlike foreign universities where there is a dedicated Human Resource Management Department which looks after recruitment, retention, and development of academic and non-academic staff, the Indian universities are undertaking these activities in a fragmented manner. Therefore, to ensure professional management of Higher Education Institutions of India, the universities may be encouraged to establish Human Resource Management Departments as a service department to take care of the most critical component of the higher education system, i.e. The Human Resource. The Group recommended that the Indian Universities should establish "Human Resource Department", as a service department to take the best care of human resource in the university in terms of academic planning, recruitment methodologies to be adopted including headhunting, retention strategies, staff development and training, personal and professional counselling and gracious exit on superannuation & need-based re-employment.

c) **Standard Operating Procedures for State Universities:** The Group while realizing that the financial discipline is not maintained in many of the State Public Universities, due to lack of trained professionals and the absence of Standard Operating Procedures. The Group recommended that UGC should lay down Standard Operating Procedures for State Universities which should be widely circulated for the benefit of the university administrators.

d) **ERP Management in Higher Education Institutions:** There is an urgent and strong need to conceive and concretise the e-governance program and develop an ERP for the universities to provide a smooth flow of information between the 'University Administration' and the 'Students, Staff and Public' so as to enhance the speed and quality of internal functioning as well as to provide a "user-friendly" access to outsiders. The ICT enabled tools shall be extensively used to improve the productivity, efficiency and 'customer satisfaction' with measurable results, in terms of a substantial reduction in the use and movement of paper, and time is taken to provide information, leading to reduced delays, cost savings as well as environmental conservation. The committee proposed that it shall be ensured that by 2021, all the HEIs are governed in e-governance model through an ERP.
The Government of India may develop a generic ERP for the State Public Universities which can be customized with the help of the Software Experts to suit the local and specific needs of a particular State University. The IIT Kharagpur model could be looked at — as it's cost-effective and open source.

e) **Leadership Training:** The Group appreciated the efforts of MHRD for launching the Leadership for Academicians Program (LEAP), which trains the potential Vice Chancellors. It was brought to the notice of the Group that higher education system of India is managed by higher education administrators including Vice Chancellors, Registrars, Deputy Registrars, Assistant Registrars and other administrative staff none of whom undergo any professional training. Hence, our higher education system is being managed by administrators with no formal training in academic governance. The result is a poorly managed higher education system, which does not work at its optimal levels, and is far from being a professionally managed system. For effective management of our higher education system, we need to shift the focus from 'Management of Higher Education' to 'Professional Management of Higher Education.' The Group recommended that specific universities be identified for conducting Leadership Training for Vice Chancellors and for other administrative staff of the universities to ensure effective and professional management of higher education system.

f) **Process for Selection of VCs/Deans/Registrars/FOs**: The Group felt that the process of selection of Vice-Chancellors is most critical to ensure the quality of higher education being imparted in our educational institutions. Therefore, apart from specifying the qualifications for the Vice Chancellors and other senior administrative staff of the university centrally by UGC or MHRD, a robust process of selection may also be enforced to ensure that only highly qualified and eminent people are part of the Search Committee for selecting the Vice Chancellor, and the Vice-Chancellor so selected through the Search Committee is an eminent personality in his or her field. The process for selection of Vice Chancellor has suitably been incorporated in the Model Act for the State Public Universities.

g) **Grievance Redressal System:** The Group felt that a robust Grievance Redressal Mechanism should exist in the universities to take care of the grievances of the students. The Group was informed that the UGC is presently revisiting the regulations for Grievance Redressal of students. The regulations were also uploaded on the UGC website to seek comments from all stakeholders which have been obtained. Here a three-tier system for redressing the grievances is being proposed. The Group appreciated this and also recommended that a similar mechanism for redressing grievances of teachers and other employees of HEIs may also be evolved.

4.3 MAJOR RECOMMENDATIONS IN A NUT-SHELL

4.3.1 The HECI for promoting the quality and standards of Higher Education and research.

4.3.2 A model State Public University Act may be developed, which may not be made mandatory but serve as a model for the State Governments to emulate. The model Act may contain the greater participation of State Councils of higher education in managing State Universities, role and constitution of various bodies, qualification and process of selection of Vice Chancellors, faculty and administrators and many provisions to create and maintain a progressive and forward-looking university. States will adopt the act if the implementation is linked with the funds.

4.3.3 A generic ERP may be developed centrally for operation in State Public Universities. This will provide a smooth flow of information between the university administration and the student staff and public at a large and help in enhancing the speed and quality of internal functioning apart from providing 'user-friendly' access to outsiders.

4.3.4 The affiliation system of the universities may be revisited whereby it shall be ensured that within two years of granting affiliation by a university, the college must be included under Section 2 (f) of the UGC Act.

4.3.5 The affiliation by the university after seven years shall continue only if an accreditation agency notified by UGC accredits the college.

4.3.6 The number of affiliated colleges with the university shall be maximum of 100, and the existing universities with a higher number of affiliated colleges shall be divided into several universities to ensure that the number of colleges with each university does not exceed 100.

4.3.7 The college shall be encouraged to become autonomous colleges, and the UGC Act may be amended to give degree-awarding powers to good autonomous colleges.

4.3.8 The appointment of Vice-Chancellors/Deans/Registrars/FOs shall be made transparently based on merit only.

4.3.9 Continuous Leadership Development Program may be arranged not only for Vice-Chancellors but also for Registrars, FOs, and Controller of Examination.

4.3.10 Also, the training of non-academic staff shall be ensured for the professional management of higher education.

4.3.11 Every university to begin with and every college at a later stage shall establish a Human Resource Management Cell for recruitment retention and development of academic as well as non-academic staff, a process which is common in all foreign universities.

4.3.12 MOOCs courses may be developed for training educational administrators.

4.3.13 The UGC has formulated a regulation for Grievance Redressal of students. On the same pattern, the regulations for Redressal of Grievance for faculty and non-teaching staff may also be formulated.

4.3.14 Mentoring by NAAC high rating universities and NAAC high rating colleges of universities and colleges which are not yet accredited by NAAC may be undertaken at the earliest to ensure quality.

4.3.15 The role of State Councils of Higher Education shall be enhanced, and they should act as a buffer institution between the Central Government - State Government - State Universities – Colleges in the State.

4.3.16 It shall be ensured that new universities are established only based on felt needs.

4.3.17 Standard Operating Procedures shall be notified for the transparent functioning of universities.

4.4. Financial requirements

Activity	**Physical**	**Costing (Rs Cr)**
Regulatory Reform-HECI Act Enact State Public University Act	Implementation in 29 States	
Affiliation Reforms - Right Size Universities (100 Colleges per University)	393 State Universities	5,000
Increasing the pool of Autonomous Colleges (2250) Autonomous Colleges)	2250 Autonomous Colleges @ Rs. 10 Cr each	22,500
Autonomous Colleges to mentor potential colleges to move towards autonomy	2250 autonomous to mentor 7500 potent potential mentee colleges @ Rs.10 lakh per mentor	225
High performing Autonomous Colleges to confer Degrees	1500 Autonomous Colleges; Regulatory reforms granting degree awarding powers	
Implementation of ERP in 500 universities	500 Universities to be readied phase wise by 2024 @ Rs. 50 lakh per universities	250

Identify 20 Premier HEIs for Delivering Professional Development Programs (scaling up LEAP initiative) for top-level leadership	1200 participants per year (60 per institution - 30 each twice a year) @ Rs. 50 lakhs per person	600
Undertake Leadership programs in 500 Universities for middle-level functionaries (10 per University) (CALEM initiatives)	2000 participants @ 400 each year @ Rs. 10 lakh per person	200
Creating Human Resource Management Development cells (100 per year)	500 HRM cells to be established (over five years)	1,000
Total		**29,775**

CHAPTER 5
EQUIP Group 5: Assessment, Accreditation, and Ranking Systems

Aim: Achieving Accreditation for all HEI's by 2024:

All HEI's shall be brought into the accreditation framework one way or the other, and every institute may be expected to offer itself or its programs for accreditation once, or more times by this deadline, since success in accreditation will always remain the prerogative of the accreditation agency. The current status of accreditation is summarised in Table 5.1:

Table 5.1

Accreditation Body	No. of HEIs or Programs under the jurisdiction	Accredited institutions or programs	Percentage
NAAC	~42000 institutions (Universities, Colleges, Standalone institutions)	8700	20%
NBA	15000 programs in Engineering, Management, Pharmacy, Architecture, etc.	3050	20%

Considering that the country today has 42000+ HEIs with a huge diversity in standards, disciplines, and academic culture, it is felt that the task is truly gigantic and very ambitious. To come close to this target, several measures are suggested in the following recommendations.

1. **Broaden the Accreditation Framework**: We need to acknowledge the diversity and provide for it in the accreditation framework. *All institutions that are accredited and all those that can be brought into the accreditation fold with some effort should be brought into the field of view of this framework*. One way to do this could be to assign a level of quality to each institution that moves dynamically with time. At one extreme of the spectrum, the highest standards are to be expected, with a graded dilution of immediate expectations from the other categories - together with ***a model for moving up the value chain.*** Institutions could be considered for categorization into Levels **A1 and A2 (representing those that stand accredited) and Levels AC1 and AC2** [representing those who could be expected to become worthy **candidates for future accreditation (accreditation candidates)] through empowerment and mentoring**.

   Thus, this objective can be understood to mean that every non-accredited HEI is examined for its current level, certified as such and then suitably mentored for them to become accreditation ready. Having such multiple levels brings a large body of institutions into the crosshair, an acknowledgement of the wide variations of standards, and has the potential to bring about a gradual transformation. Minimum qualifiers (NIRF-like pointers) for eligibility should be formulated for each level, and those not satisfying the minimum qualifiers for level AC2 be given a time frame of

two years to ramp up. All eligible institutions must apply within a year, for **accreditation** or **accreditation candidature** status as appropriate for them. Such a categorization and certification will go a long way to bring about the transparency of standards of different institutions to students, their parents, and employers, with a clear picture of what to expect from a given institution. At the same time, this categorization will also help in identifying institutions that can be mentored, and the extent of mentoring needed by each to move up the value chain.

2. **Categorization**: This categorization of institutions should be carried out periodically as part of the regulatory approval to continue its programs based on an ICT driven database, like AISHE, which should be updated with the information as needed to enable benchmarking of each institution against the minimum qualifiers for each category or level. This would entail including key information like faculty-student ratios, faculty qualifications and experience, and student performance. The categorization could perhaps be automated based on a relevant database, ***but aided by physical verification as appropriate. Regional Benchmarking Agencies proposed in section 2 will be expected to handle these tasks for Levels AC1 and AC2, and issue classification lists, certification to this effect.*** *It is important to add here that a reliable and authentic database containing key information like the NIRF pointers for every HEI is the need of the hour. Among other things, it will also help if the database contains the latest authentic information about the teachers employed in each HEI, at any given time.*

3. **Capacity Expansion**: Existing accreditation agencies must rapidly expand to enhance their capacities for accreditation significantly, additional accreditation agencies may be set up (with a suitable oversight) to help with the task. Specific recommendations on setting up multiple agencies have been taken up later in section 5.1.2. a).

4. **Outcome Orientation**: Irrespective of the level at which accreditation or benchmarking is sought, the accreditation framework should be focused on outcomes in each of its accreditation criteria, especially student learning outcomes, which should be articulated clearly for every field of study in the institution.

5. **Building Credibility with Employers**: The purpose of accreditation is to ensure the quality of education as expected by or acceptable to the various stakeholders, viz., students, parents, the Government, and most importantly the employers. One of the greatest and natural incentives for accreditation would be that of recognition of the quality by the employers, who would then associate quality with the accreditation status of an institute. All other stakeholders then get suitably aligned with this objective. The accreditation agencies must, therefore, extensively interact and associate with the employers to seek their inputs and together add to the value of accreditation. If the employers recognize the benefits of accreditation and link their recruitments to the accreditation status, this will provide a direct incentive to the institutions to prepare themselves for accreditation.

6. **Visible Penalties for Failure to Improve Standards**: Institutions that fail to either come up to the minimum qualifier levels (benchmarks for AC2) within a given time-frame, or failing to achieve accreditation at an appropriate level, should be viewed by the concerned regulatory agencies with very serious concern, and some of their programs may be suitably toned down (for a specified period) or even closed, if deemed fit.

7. **Incentives and Mentoring**: Institutions that do consistently well at a given level, may be considered for suitable incentives from time to time, to improve further in quality, and even move to become eligible for a higher level of accreditation/quality certification. For this, they may take help from the mentoring system discussed subsequently. They may also be considered for various incentives like financial assistance, enhancement of programs and autonomy, depending on their level of quality achievement. Such institutions can be considered fit candidates for encouragement to participate in national and international rankings – and mark their presence in the global higher education scene.

8. **Liberal Funding or Revenue Generation Model**[18]: The members noted, however, that to bring about a major transformation in the HEI system that is so large and so diverse, massive investments are needed, and there must be good and ensured funding and revenue generation models for the institutions. It is important that the regulatory fee models of the HEI's be liberalized (with suitable checks and balances) to empower them to recruit the best faculty and set up the modern infrastructure to induce improvement in their standards. Good higher education does require considerable financial inputs, and this has become a bottleneck in many private or State institutions. Thus, the goal of accreditation for all may remain a shallow dream and wishful thinking, if this aspect of raising standards is ignored. The State Government funded institutions require special attention, and the general impression is that many of them are in a pathetic state of funding with poor infrastructure, extremely poor record of faculty recruitment over the last many years or even decades, and at times suffering from blatant interference of the state in some form or the other, in the running of their day-today-affairs. A way needs to be found to handle this state of affairs, without which the HEI system will be very difficult to reform.

5.1.1 Setting up Multiple Agencies

Considering the ambitious objective discussed above, it is obvious that the current framework that has only two major accreditation agencies is far from adequate. These agencies have played a very important historical role, and are currently engaged in excellent work on accreditation. While these agencies should be empowered to enhance their capacities, it is imperative that we expand the capacity and reach of the accreditation framework further, if the mission of the previous objective has to be achieved. It is noted that the Government has already notified regulations and guidelines through a Gazette notification (in August 2018) for setting up multiple agencies in the public domain with a suitable oversight system. This framework can be used to set up multiple agencies for accreditation. Following specific recommendations are being made to expand the accreditation network for a better reach.

i. Create agencies for accreditation and quality certification based on
- Broad disciplines (e.g., Law, Medical, and Nursing, etc.)
- Accreditation or Benchmarking levels mentioned earlier, and

[18] This recommendation may seem to be out of place (or beyond the scope) in the report of this Group, but the members felt that this issue is sufficiently important to need a strong mention here. No HEI system can attain quality if it does not have access to sufficient resources commensurate with the kind of education it aims to provide.

- Regions, and States.

Some broad principles that would be useful in creating such agencies are discussed in section **5.2.1.**

ii. National agencies like NAAC and NBA (and additional national agencies that are created) should continue to operate at the highest levels and maintain their international image. Further details of this approach are taken up in the section on Action Plans.

iii. Benchmarking at lower levels (AC1, AC2) should be taken up every year and handled by Regional Benchmarking Agencies under a coordination agency at the national level to be set up for this purpose.

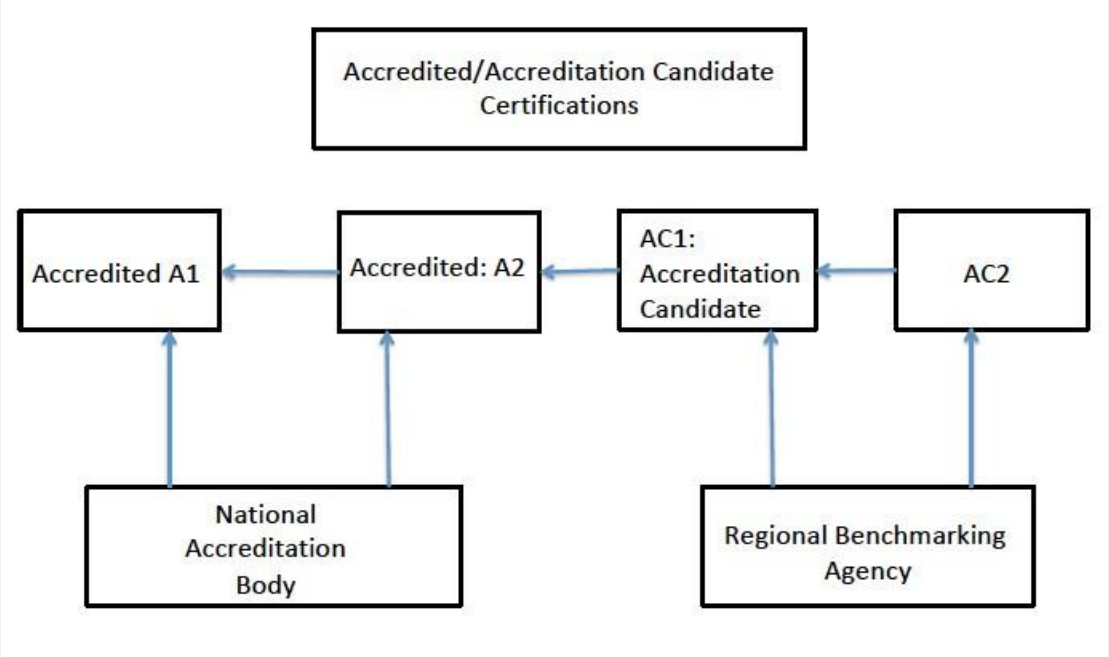


Figure 5.1

5.1.2 Mentoring Systems for Non-Accredited HEI's

It is obvious that the task of making institutions accreditation ready is truly gigantic, and it is extremely important to set up an effective and pro-active **Mentoring System**, that will help non-accredited institutions to get accreditation-ready, and the HEI's at the lower levels to be able to move up the value chain. The mentoring systems recently put in place by the UGC, AICTE, and NBA, step in the right direction, but a much more intense effort is needed given the magnitude of the task. Specific recommendations are as follows:

i. In view of its extreme importance, this task should be taken up in a mission mode, by setting up a ***National Mission on Mentorship of HEI's***, and should have partners from the regulatory bodies like the UGC and AICTE, the accreditation bodies (including NBA and NAAC), and all good academic institutions like the IIT's, NIT's, other central technical institutions and universities.

ii. Senior academicians from across the country, including eminent retired professors, should be identified and invited to contribute to this national mission. However, for the effort to have an impact, this should be efficiently coordinated and targeted by the Mission Office. A model that encourages and motivates good participation of eminent academicians from the best institutions, on a large scale, needs to be developed.

iii. Identified top institutions should be encouraged and empowered to set up Institutional Mentoring Divisions (IMD's) with suitable funding to take this mission forward.

5.1.3 Making Participation of Public Funded Institutions in NIRF Rankings Mandatory

It is truly a matter of satisfaction that the NIRF rankings have helped the development of a keen interest amongst the HEI's to improve their performance vis-a-vis the ranking parameters. Despite very stiff competition, the HEI community continues to take a keen interest. This augurs well, and it is expected that rankings will play an increasingly important role in the higher education reforms in the years to come, and the rankings systems will have to be evolved to make them more expansive and inclusive in terms of fields, and terms of depth of ranks. Challenges like ensuring the accuracy of data in this scenario have to be taken up in the future to meet these objectives.

There exists some genuine disagreement on whether all HEI's should be mandated to participate in these rankings, and whether the rankings should be given so much importance.

i. Be that as it may, at the very least, all publicly funded institutions should be held accountable for their performance. The data submitted to NIRF can serve as a report card to the Nation in terms of an Institute's standing vis-à-vis the public investment made. It stands to reason, therefore, that this proposal be taken to its logical conclusion, by directing all centrally funded institutions to participate. In the same vein, the State Governments should also be asked to notify a similar mandate for institutions funded by it.

ii. Of course, non-government aided institutions should be encouraged to participate in the larger interest of the students.

iii. Having established itself as a robust system over the last four years of its operations – despite some teething issues in the first year, it is time now for NIRF to widen its horizons and establish itself in other related activities to deepen its impact. There is a need to devise ranking systems at the discipline/department levels in areas like sciences, engineering, and others. Also, from the extensive data submitted by the institutions, there is need to develop insights into the status of different aspects of the national Higher Education System and its dynamics from year to year, which can provide crucial inputs to educational planning. There is a need to develop methods that would make it possible for a larger number of institutions to become visible in the ranking profiles. Moreover, for all this to be possible, there is a need to develop automated and efficient physical models to ensure the authenticity of the data being submitted to NIRF, which is currently one of the major bottlenecks limiting its reach.

iv. Finally, it follows that NIRF should now be further strengthened by setting it up as a separate autonomous organization that focuses on all ranking related activities, strategies, and research, throughout the year and on a long-term basis, and make it an integral component of the Higher Education Evaluation System, together with accreditation and quality benchmarking.

5.2 ACTION PLANS

5.2.1 Achieving Accreditation for all HEI's by 2024

Following on the major strategic recommendation of the previous section, the following specific action plan is conceived for defining accreditation or quality certification at various levels.

a) Specific Actions

i. The group observed that approximately 20% HEIs or their Programs stand accredited today by the NAAC and NBA systems. Because there are about 42000 HEIs with highly diverse backgrounds and standards, in the higher education eco-system of the Country, the Recommendation **i.** of the Strategy Section **5.1.1. a)** has recommended that multiple levels of accreditation and quality benchmarking be introduced to ensure that by 2024 all the HEIs are brought into the net of quality assurance, using carefully formulated differential quality benchmarks. More importantly, whereas the top level will be attained only through the rigorous processes of accreditation being practised by NAAC and NBA today (and by other accreditation agencies that may be set up), the quality parameters for benchmarking at levels 3 and 4 will be based on certain quantitative pointers indicative of the potential for quality. These levels must be relatively easier to establish and use, to benchmark. Some details are suggested in para **ii** below. Furthermore, through a sustained effort of mentoring and up-gradation of inputs, institutions at the lower levels can be made to rise to higher levels. This approach will ensure transparency for the students, parents, and employers about what to expect. Thus, the stakeholders can make well-informed decisions on a year-to-year basis based on the positioning of the HEI's at an appropriate level. At the same time, the model should also provide for an upward movement of levels over time, with appropriate mentoring and inputs.

ii. Building on this thought, the group specifically suggests **'4' levels of quality benchmarks** as detailed in section **5.1**. The first two levels are accreditation levels (for example, as set by the NBA (6 years and three years accreditation, respectively) and NAAC (score 3.26 and above, score between 3.26 and 1.6). The level AC1 will comprise of institutions or programs that either meet the pre-qualifiers for accreditation, but fail to achieve accreditation or have not yet offered themselves for accreditation (while meeting the pre-qualifiers). Finally, institutions and programs that fall marginally short of this pre-qualifier but are ascertained to have the potential to bring themselves up to meet the pre-qualifiers in a given time frame (1 - 2 years) will indicate Level AC2. Levels AC1 and AC2, thus, are not equivalent to accreditation level but imply that these HEI's could become serious candidates for accreditation with some level of mentoring and inputs in a time frame of one or two years.

iii. The major impact of this categorization is that all institutions with a basic minimum standard will be brought into the fold and expected to move up the value chain with some mentoring and inputs. The process of identifying institutions/programs with levels AC1 and AC2 would be simple and easily implemented by appropriately identified agencies, to be considered in section **5.2.2.** The qualifiers or pointers for the levels AC1 and AC2 will be suitable quantitative parameters such as Faculty to Student Ratio, Student enrolment, PhD faculty, Success Rate of Students in University Examinations, and Students scoring good marks (say >=60%) in their chosen program of study, etc.

iv. Although the actual performance parameters for such categorization or levels will lie in the domain of the accreditation and benchmarking agencies, in keeping with their standards, some indicative qualifiers for Level AC1 may be (based on an average of the previous two years) used are as follows:

<u>AC1 qualifiers</u>

- ✓ Faculty to Student Ratio – between 1:26 to 1:40
- ✓ Percentage Student Enrolment – between 40-50%

- ✓ Percentage PhD faculty – at least 10%
- ✓ Success rate – at least 40% of students the passing program
- ✓ Students scoring >=60% marks in the program – at least 50%

AC2 qualifiers

- ✓ Faculty to Student Ratio – between 1:40 to 1:50
- ✓ Percentage Student Enrolment – between 30-40%
- ✓ Percentage PhD faculty – at least 5%
- ✓ Percentage Success Rate – at least 2 of 5% students passing program
- ✓ Percentage Students Scoring >=60% marks in the program – at least 30%

v. The following is a possible scenario for the estimated distribution of institutions at various levels today:

- ✓ A1 – 5%
- ✓ A2 – 20%
- ✓ AC1 – 30% (HEIs - Not accredited of A2 and meeting qualifiers of AC1)
- ✓ AC2 – 25-30%
- ✓ Below AC2 – 15-20%

vi. The 15-20% HEIs which are not able to meet qualifiers of AC2 level will be referred to the respective regulatory authority for appropriate regulatory enforcement actions. Such HEIs may be given a period of '2' years to attain the qualifiers of AC2 level or else may be asked to close down.

vii. A model for institutions to move up the value chain (from AC2-AC1-A2-A1) is taken up in the next section of Multiple Agencies.

5.2.2 Creating Multiple Agencies

At present, there are two national accreditation agencies, viz., NAAC, and NBA. NAAC accredits institutions after a holistic assessment of their quality. NBA, on the other hand, accredits undergraduate and diploma technical programs in the disciplines of Engineering, Management, Pharmacy, and Architecture. As noted earlier, between them, these agencies have accredited about 25% of the existing HEI's and their programs so far. Following the strategy outlined in section **5.1.2,** the following specific approach is suggested.

i. Enhance the Accreditation Capacity at the highest level (i.,e. at levels A1 and A2), by creating additional national level agencies on the lines of NAAC or NBA to provide accreditation and quality assurance in other professional disciplines. Example of professional disciplines that come to mind is Medical and Allied fields, Law, Teacher Education, etc.

The basic principles that need to be kept in mind while creating multiple agencies for accreditation are as follows:

- Group all existing institutions into a few important categories such that institutions belonging to a given category all have something in common in terms of the field or the nature of the education they offer. Example categories could be (a) field centric as mentioned in the preceding para (technical, medical, law etc.); (b) Comprehensive Universities; (c) Universities or institutions with a single (or a dominant) field (like Yoga, Sanskrit, Sports or Music and Teacher education); (d) Open distance learning; (d) Affiliated non-technical colleges etc.
- It will be pertinent to identify large groups (or subgroups) that will benefit from the creation of a separate agency for accreditation on a long-term basis.

- To the extent possible, institutions may be expected to go to a single agency for accreditation, so that the capacity is optimally utilized.
- In specific cases, specialized programs (or departments offering such programs), which are part of a single large comprehensive university, may separately seek accreditation in their special fields, to cater to the special outcomes expected from graduates of such fields by national and international trends or alignments. Examples of this could be technical programs (like engineering, management, pharmacy, architecture, etc.), medical programs, law programs, etc. However, in areas where there is no special felt need for such program-specific accreditation, institutional accreditation should be considered sufficient.

  It is recommended that three additional national agencies aligned with this principle be created initially, and others created gradually based on a strong felt need. The five national agencies (including the three being proposed here) will go a long way to bring high-quality accreditation uniformly to all the important disciplines in the domain of Higher Education. As noted earlier, these five accreditation agencies will concern themselves only at the highest levels of quality assurance, viz., A1 and A2 in keeping with their national character and to serve as benchmarks for all others.

ii. Create a Central Benchmarking Agency to create ***new benchmarking capacity*** for HEI's at levels AC2 and AC1. For benchmarking at these levels, a different and simpler process is recommended. Thus, unlike the accreditation levels, here, the task is relatively simpler. However, the size of the group is huge, since about 70% of the HEI's are likely to belong to this category. A significant part of the work here can perhaps be automated based on the data submitted by these institutions to a national level database (perhaps a significantly improved version of AISHE), in which participation can be made mandatory through policy intervention. However, a minimal level of physical verification would be required. The whole effort could be easily managed by having a Central Benchmarking Agency that will:

- identify non-accredited institutions that qualify for AC1 or AC2 levels based on identified qualifiers,
- grant certificates of compliance after some basic level of physical verification, and
- Co-Ordinate with the National Mentoring Mission to network them with high-quality mentors and help them to move up the value chain in an appropriately defined time-frame.

The task of setting up the National and Regional Agencies can also be overseen by the **Accreditation Advisory Council** as stipulated under the recent **Gazette notification of August 2018 for Multiple Agencies**. As a first step, the Council should formulate a model for the MoA's of these agencies.

A schematic implementation of the new Accreditation/Benchmarking System is shown in the block diagram below.

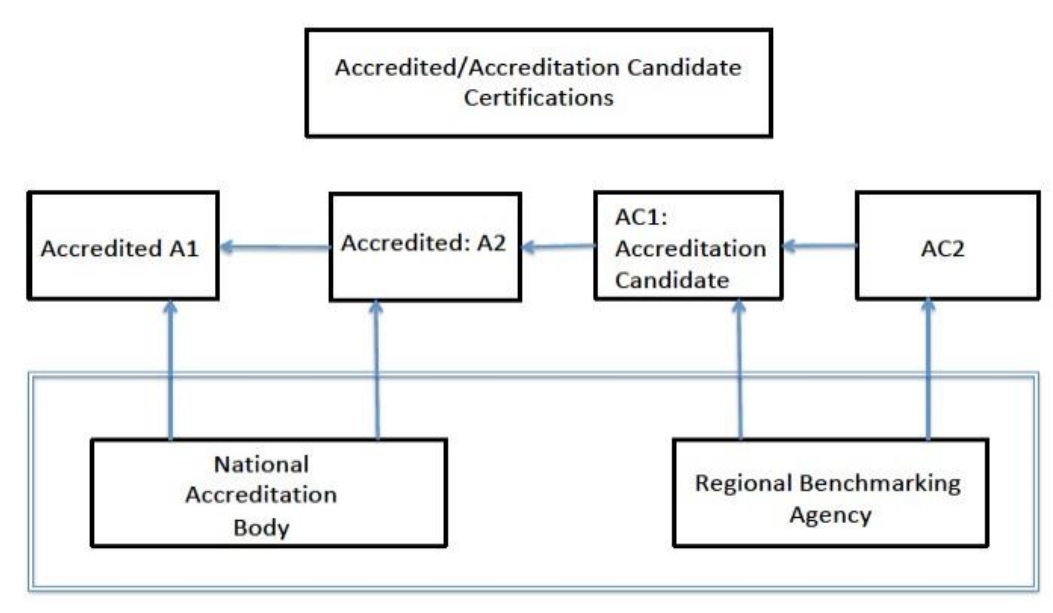


Figure 5.2

5.2.3 Framework for Mentoring of the Higher-Education Institutions

Throughout the deliberations so far, it has been assumed (and rightly so) that the prevalent quality status and readiness of HEIs vary substantially, and many of these institutions could be resource-deficient. In a four-tier quality framework delineated in the previous sections, a large number of candidate institutions could be at the bottom of the pyramid. Propelling these institutions from AC1 and AC2 levels towards the coveted accreditation process is one of the primary goals of the intended endeavour.

A vital aspect of this endeavour is **formulating and implementing mentoring activities in a mission mode** that can have a significant impact on the accreditation efforts of these institutions. So, the main action suggested here is that MHRD launches a **National Mission on Mentoring of HEI's**, as stipulated in section **5.1.3. a)**
The primary objective is towards enabling 42,000 plus HEIs to seek accreditation by making them accreditation ready in about five years.

The mentoring that is intrinsic to this objective comprises of

- **i.** Providing inputs for improvement of teaching and learning practices.
- **ii.** Providing inputs and advice for improving institutional governance.
- **iii.** Improve student learning through an internal assessment of Student Learning Outcomes.
- **iv.** Providing greater access to digital resources and using them for mentoring missions.
- **v.** Breaking stereotypes and biases to bring about behavioural change and mindset.
- **vi.** Increasing faculty productivity and motivation.

The main actions needed here is to identify a pool of HEI's and senior mentors who will prepare the content for such mentoring, and get involved in the large reaching out process that is needed.

5.2.4 Expanding the NIRF Activities

The Group again noted with satisfaction that the NIRF ranking had helped the development of a keen interest in the HEI's to improve their performance vis-à-vis the ranking parameters. However, there is immense scope for the expansion of these activities. Its activities should include, but not limited to, the following:

a) Formulating and updating the criteria and parameters of ranking for different categories of institutions and disciplines from time to time based upon a felt need and feedback from the stakeholders.
b) Strengthening the verification processes for ensuring the authenticity of the submitted data.
c) I am enlarging the participation of institutions in the ranking effort.
d) I am making the participation of public HEIs mandatory in NIRF rankings.
e) Researching the changes and dynamics of institutional profiles and directions, as evidenced by ranking data submitted by them.

The group suggested that there should be an independent agency to implement the NIRF to engage in these and related activities continually. The agency should be set up directly by MHRD and should be an autonomous body functioning under it, on the lines of the NBA. However, unlike the NBA, NIRF should be funded completely by MHRD at least in its initial years.

5.3 Financial Inputs and Models

In this section, we summarise the financial implications for the implementation of the proposed plans of action. It may be noted that the first two objectives are closely interlinked, and the primary vehicle for bringing the entire HEI system in the accreditation framework one way or the other will be through the following accreditation and QC agencies:

5.3.1 Accreditation Agencies

a) National Board of Accreditation (NBA) (for Technical programs)
b) NAAC (for general institutional accreditation)

Three additional national agencies based on the principles outlined in section **5.2.2. a)**.

As noted earlier, the five-accreditation agencies will primarily concern themselves with accreditation activities, viz., accreditation activities at levels A1, and A2. Of these, the first two are already operational and do not require budgeting here. It is proposed that the **three new national accreditation bodies be set up as self-supporting autonomous bodies of MHRD (on the model of NBA), with initial seed support from MHRD to the tune of Rs. 50 Crores spread over the first two years of operation.** This will provide for initial expenses for building, IT structure, and workforce costs to get them off the ground.

5.3.2 Benchmarking Agencies

a) National Benchmarking Authority for HEI's (NBAH) as the central agency coordinating the effort.
b) The Benchmarking authority and the benchmarking agencies are recommended to be Government Agencies funded entirely by the Government.
c) Indicative Expenditure in respect of a Benchmarking Agency (NBAH): It is assumed that the Agency will have 6 Bureaus to benchmark institutes across the country. The total cost of these bench-marking agencies is Rs. 12 Cr per year.

5.3.3 Mentoring Mission

National Mission on mentoring HEIs: Mentoring of the non-accredited institutions needs to be multi-dimensional. The first step towards this process would be to identify mentors who will be able to make a difference. Currently, there are approximately 42000 colleges, out of which only about 10,000 colleges may be accredited at levels A1 and A2.

Thus, the target number of institutions to be brought under the ambit of accreditation by 2024 is about 32000.

It is proposed that the **National Mission on Mentoring can be handled by the Benchmarking authority mentioned above, i.e., by NBAH for ease of implementation**. Assuming that each mentor makes six visits to an institution to interact with the institute six times in a year for a maximum of two years each, about 400,000 mentor visits are needed, which could be spread over a period of five years, by mobilizing a suitable number of mentors each year. As an example, in the first year, a total of 1000 mentors should be identified spread across top institutions, and eminent retired professors, scientists, and other qualified volunteers selected carefully for this purpose. Another 1000 mentors may be added in the second year. The actual accreditation load on each volunteer will be adjusted according to the number of mentors that can be mobilized. However, no more than six visits for six institutions per year will be planned for any given mentor.

Based on this model, the following investments will be required to cover the entire mass of HEI's in a time frame of 5 years. These cost calculations account for the travel, stay and honoraria of the mentors (@ Rs.5000 per day).

First Year: Rs. 108 crores.

Second to Fifth Year: Rs. 216 crores per year.

5.3.4 NIRF

The financial model for an independent NIRF will need to include the following costs:

- Workforce cost: estimated to be 4 Crores/year
- IT facilities and hosting costs: 1 Crores/year
- Building and Infrastructure: As per actuals.

5.4 YEAR WISE PLANNING

5.4.1 Tasks to be done

First Year

a) The decision on Additional National Accreditation Agencies by an Advisory Council: Numbers (3, 4) and Deciding Their Scope: 3 months from t=0. The decision could be based on the general principles outlined in section **5.2.2. a)**

b) Creating a national database for NIRF like information regarding every HEI, as soon as possible, preferably at t=0.

c) Setting up and Operationalising 1 National and 8 Regional Benchmarking agencies together with year-wise targets: 1 year from t=0. Alternatively, a single national agency could be mandated to undertake the benchmarking of every HEI.

d) Setting up and Operationalising 3-4 additional National Accreditation Agencies: 1 year from t=0, together with year-wise targets.

e) Setting up and Operationalising the National Mission on Mentoring: 1 year from t=0.

f) Setting up an independent organization for NIRF and Ranking Research Work: 1 year from t=0.

5.4.2 Targets for Benchmarking Agency/Agencies

a) Mobilize resources to create the required national database for NIRF like information for every HEI: Year 1.

b) Ensure updating of the data every year in a reliable manner by mobilizing all eight regional agencies to benchmark HEI's in their respective regions based on automation and partial physical verification. Every Year from Year 2 onwards.

c) Benchmarking every non-accredited HEI based on set criteria for AC1 and AC2 levels. Every Year from Year 2 onwards.

5.4.3 Targets for Accreditation Agencies

a) Set up credible accreditation criteria and operational frameworks and year-wise targets for their domains of operation: 1 year from t=0.
b) Start accreditations from Year 2 onwards.

5.4.4 Targets for National Mission on Mentoring

a) Prepare Top-Level guidelines for Mentoring content and framework.
b) Identify 20-30 Institutions/Universities who can set up National Mentoring Cells.
c) Create capacity of a 1000 quality mentors mentoring about 5000-8000 institutions in a year.
d) Create a mentoring calendar and a mechanism for monitoring its effectiveness.

6. Financial requirements

Targets/Initiative	**Costing (in Rs Cr)**
Enhance the Accreditation capacity at National level: Creation of additional agencies in disciplines like Law, Medicine, etc. and agency for accreditation of Autonomous colleges offering degree level courses in Science, Humanities and Arts & Education.	50
Launch of National Mission on Monitoring of HEIs by set up a National Mission on Mentoring with the partnership of all accreditation agencies, top institutions in A1, A2 category, and a network of eminent retired Professors, Scientists, and Industry persons.	922
The mission should closely coordinate with the National and Regional Benchmarking Agencies (NBAH and RBA).	10
Set up NIRF as an independent organization to widen the scope of its activities. NIRF to be made an integral component of the Higher Education Evaluation System together with Accreditation and Quality Certification.	30
Total	1012

CHAPTER 6

EQUIP Group 6: Promotion of Research and Innovation

BACKGROUND

India has to be at the forefront of knowledge creation, and Research and Innovation (R&I) as it aspires to progress through sustainable development and be a world leader. India's young demographic must be made an effective dividend in this mission. Here, the role of the Ministry of Human Resource Development (MHRD) in shaping the future of our nation is critical. The focus needs to be on three important aspects:

6.1.1. Ensuring high-quality human-resources, comparable to the global best with a good understanding of research and innovation methods, trained for critical-thinking ability and the daring to think out-of-the-box.

6.1.2. Create substantial numbers of interconnected centres of global excellence as drivers of research and innovation, with deep connections to society and the economy

6.1.3. Effecting the funding of research and innovation from the fundamental to the applied in all areas and ensure translation into areas of national importance.

6.2 CURRENT CHALLENGES IN RESEARCH AND INNOVATION: INDIA'S POSITION IN THE GLOBAL SCENARIO

a) India's R&I investments vis-a-vis global standards shows that India's R&I investments have steadily dropped over the last decade – from 0.84% of Gross Domestic Product (GDP) in 2008 to around 0.69% in 2018. For the sake of comparison, the levels of R&I investment as a proportion of GDP in some other countries are United States (2.8%), China (2.1%), Israel (4.3%), and South Korea (4.2%).

b) The small proportion of GDP that India currently invests in R&I is reflected in its research-output metrics. The number of researchers per lakh of the population is only 15 in India, compared to 111 in China, 423 in the United States, and 825 in Israel (Economic Survey of India 2016-17).

c) As a direct consequence, India severely lags in the number of patents and publications produced. According to the World Intellectual Property Organisation (WIPO) 2017 report, China made as many as 13,81,584 patent applications, with just 9.8% being made by non-resident Chinese, the USA made 6,06,956 patent applications, while India made a mere 46,582 , of which approximately 68% were by non-resident Indians, and only 26% (12,387) of them were accepted as patents.

d) In terms of publications, India has been doing somewhat better, showing steady growth in its output and taking India's share of scientific publications from 3.1% in 2009 to 4.4% in 2013 and to 4.8 in 2016. However, a 2018 compilation of Science and Engineering indicators by the US National Science Foundation showed that both the USA (17.8%) and China (18.6%) published approximately four times as many articles as India in 2016.

Country	Scholarly Output			
	Overall	2016	2017	2018
China	1639436	496669	536970	605797
Germany	535502	176358	179230	179914
India	477857	151672	154306	171879
United Kingdom	625088	202543	209849	212696
United States	2030335	663378	681318	685639

Source: Elsevier Research intelligence 2019

e) The quality of the publications has been lower than the global standards. Though in terms of the total publications India stands at 5 in the World, in terms of the citation impact, it stands much lower, at 11. Only 15.8% of the total publications are in the top 10 journals. Therefore, there is a need to focus on the quality of research. Presently, sizeable numbers of research and technology institutions/ universities are spread across the nation, which includes central/ state government funded and self- financed institutions. Despite these huge investments, the quality of R&I is not of current global standards. Moreover, none of these institutions are amongst the top 100 R&I institutions in the world. Also, the quality of the workforce produced by these institutions is not amongst the best in the world.

Name	Collaboration Impact	Field-Weighted Citation Impact	Publications in Top 10 Journal Percentiles (%)
China	7.3	1.01	27.6
Germany	7.5	1.39	33.4
India	6.1	0.81	15.8
United Kingdom	7.5	1.58	37.3
United States	7.3	1.41	36.2

f) In India, currently all R&I efforts are primarily funded by the Central Government. The Economic Survey Report (2017-18) suggests that there is a need for greater State Government participation, especially for promoting application-oriented research & development specific to their economies and populations. Without a collaborative effort between the Central and State government, India will never be able to achieve the above-stated objectives. Also, the focus should be on encouraging multi-disciplinary, multi-institutional, multi-investigator led the research, thus linking national labs to local universities and educational institutions for creating new knowledge ecosystem in the country.

g) The fundamental limitations of our educational system include marks-based assessment of students' potential, thereby promoting mugging-up of entire textbooks, too much parochialism, and inability to impart analytical skills. Innovation and creativity are also highly missing, and our curriculum does not give importance to soft skills, user research, or human-centric development.

h) As per the National Employability Report 2016, 80% of engineering graduates are considered unemployable for core engineering jobs, and only 1% of engineering students undergo credible training or internship during their graduation years. Very small percentages of students are capable of identifying a problem and visualizing an approach for finding the best solution. Moreover, the

ability to think out-of-the-box is completely missing. As a result, confidence level or appetite for taking risk is very low, especially for pursuing new ideas.

The primary reason for these problems is the absence of an integrated and comprehensive approach towards funding R&I initiatives and monitoring of their outcomes.

i) Another major impediment for R&I in India is lack of cognitive or critical/design thinking skills in a large section of our youngsters. To address this problem, there is also a dire need to promote a special program within our educational system for developing cognitive and design thinking skills in a large number of students. These skills will not only empower students to identify and visualize problems within their ecosystem but will also promote them to offer constructive, out-of-the-box, yet sustainable solutions.

In a nutshell, the primary problems are lack of research culture and mindset, limited funding, and lack of research capabilities in most universities.

Although, several schemes like SERB, IMPRINT, etc. were launched; their impact was limited due to their very conventional implementation model, hence less efficient.

It is imperative that a research funding body at the national level is developed which focuses aggressively on promoting R&I activities of global standards amongst our large number of HEIs in a sustainable and result-oriented manner. This focus on R&I will not only help India as a global hub for research and innovation but will also positively transform the society.

6.3 NATIONAL RESEARCH FOUNDATION (NRF)

Considering our emphasis on promoting R&I activities of global standards in our HEIs and also the deficiencies of already existing systems like SERB, a more comprehensive approach needs to be taken for transforming the quality and quantity of research in India. This can be achieved by establishing 'National Research Foundation (NRF).' The over-arching goal of the NRF will be to enable a culture of research to permeate through our universities. In particular, the NRF will explicitly aim to remove the current obstacles in creating a global quality research ecosystem in the country by providing a reliable base of merit-based peer-reviewed research funding, helping to develop a culture of research in the country through suitable incentives for and recognition of outstanding research, and by undertaking major initiatives to seed and grow research at State Universities and other public institutions where research capability is currently limited. Successful research will be recognized, and wherever relevant, will be implemented through close linkages with governmental agencies as well as with industry and private/philanthropic organizations.

The NRF will primarily focus on the following:

6.3.1 Building high-quality human-resources, comparable to the global best with a good understanding of research and innovation methods, trained in critical-thinking abilities and the daring to think out-of-the-box.

6.3.2 Create substantial numbers of interconnected Centres of Global Excellence as drivers of research and innovation, with deep connects to society and the economy.

6.3.3 Fund research and innovation projects/initiatives in areas of national importance. Recognize outstanding research and progress achieved via NRF

funding/mentoring across subjects, through prizes and special seminars acknowledging the work of the researchers.

6.3.4 Provide a large number of fellowships to doctoral and Post-doctoral fellows

6.3.5 Create 'Innovation Fund' for supporting innovative projects at pre-incubation, incubation and start-up level.

The proposed NRF aims to transform the quality of R&I in India. The overarching goal of NRF will be to penetrate the culture of R&I in a large number of our HEIs. NRF also aims to provide a comprehensive merit-based peer-reviewed funding, to seed and grow research at State Universities and other public institutions, thereby overcoming the current impediments.

Briefly, the mandate for proposed NRF will be to promote and support global quality R&I through funding, human resource development, development of cognitive skills amongst students through various online and offline courses, thus unleashing the R&I potential in our youngsters. This model will work by hiring best people, infrastructure development, and establishing linkages with various stakeholders, including local industrial and educational ecosystem.

6.4 STRUCTURE OF NRF

a) NRF will be an apex body formed under the Chairmanship of Prime Minister and will aim for excellence in knowledge, people and infrastructure. It will focus on promoting R&I activities in branches of Science and Technology, Humanities and Social Sciences identified through national and state missions.

b) NRF will operate with a unique Hub & Spoke model, where the 'Central Office' or 'Hub' of NRF will create a network of 'Spoke' called 'Centres of Excellence (CoEs)' specifically focusing on 'thrust areas' selected based on national missions.

c) The 'Hub' of NRF will define the vision and long-term strategy for the NRF program, while CoEs will be on-ground 'delivery units' which will help achieve NRF's targets with high efficiency and less bureaucratic hindrance.

d) The Hub will be directly under the 'NRF Board,' while each CoE will be a semi-autonomous unit with its administrative structure but reporting to the NRF Hub.

6.5 FUNDING OF NRF

The NRF will be funded by a direct transfer of 1% of the central government budget estimates every year. The funds for the research and development would be shown in every Ministry/Department budget, but would be virtually operated by the NRF to promote the research activities.

The virtual pool of funds with the NRF would be used to fund research activities in various departments and schemes in a coordinated fashion. All the major research Bodies would be part of the Governing Council of the NRF, presided by Prime Minister.

Later NRF may raise additional funding from industrial houses, investors, venture capitalists, philanthropists, research bodies and through convergence with other government schemes. The capital for subsequent years will be increased and fine-tuned based on the performance of the NRF structure and team. More funds may be allocated for expanding current thrust areas/CoEs or for establishing new CoEs based on the recommendation of the Government, Executive Council or Governing Board.

6.6 PROVIDING FUNDING SUPPORT TO R&I ACTIVITIES THROUGH 'NRF GRANTS'

NRF will support R&I activities through NRF R&I Grants. For direct funding, outstanding research proposals from researchers of all CoEs, IIRC, research institutions, HEIs and schools, both public and private will be eligible. This mechanism will help attract research mentors, postdocs, and doctoral students, thus augmenting the growth of R&I ecosystem in NRF network institutions. Under the NRF program, the researchers will also have an opportunity of doing R&I activities/projects in the lab across the world. Researchers of CoEs and allied IIRCs may also raise funding from other agencies such as DST, DAE, DBT, ICAR, ICMR, UGC, AICTE, TDB, TIFAC, NITI Aayog, and various private and philanthropic organizations.

Proposals for NRF Grants will be called through the 'Grant' section of NRF Division. NRF will encourage R&I proposals by individual investigator or group of investigators, joint intra or inter-institutional projects, large and long-term projects of national importance and projects with pan-India impact. NRF will also float Grand/Mini Challenges or other R&I competitions in thrust areas.

Moreover, NRF will encourage well-envisioned proposal for workshops or training aimed at capacity building and creation of skilled human resource in R&I activities. More importantly, the proposals which will help build R&I capacities in State universities/ institutions/ colleges will be encouraged. The projects involving international collaboration will get additional preference.

For NRF Grants, generally R&I projects with durations up to three years will be considered; however, under exceptional cases, outstanding proposals with high national impact but with five years or even longer duration can also be considered (e.g., Grand Challenges).

6.7 GOVERNANCE IN NRF: STRUCTURE AND MECHANISM

As stated above, NRF will be an apex body under the Chairmanship of Prime Minister and will be governed by a Board of Directors consisting of leading researchers and professionals in their respective fields. The Principal Scientific Advisor (PSA), Govt. of India will be the Chairman of the NRF Board. (Differences between the role of chairman of the board and the NRF) The 'Chief Executive Officer (CEO)' will be the overall in-charge and will be accountable to the NRF Board. He will be supported by 'Advisory Committee' of subject matter experts to develop a strategic blueprint and detailed implementation roadmap.

NRF will have dedicated workforce (approved by the Board of Directors) and will comprise of CEO, Directors, Additional Directors, Assistant Directors, Finance officers, Managers, Legal officials, R&I Officers, Administrative staff, MTS, and others. CEO will also coordinate across Centre, States, MSMEs, and external stakeholders to ensure that external agencies are efficiently used for the formation of CoEs and sharing of best practices. The comprehensive organizational structure for NRF division is indicated below.

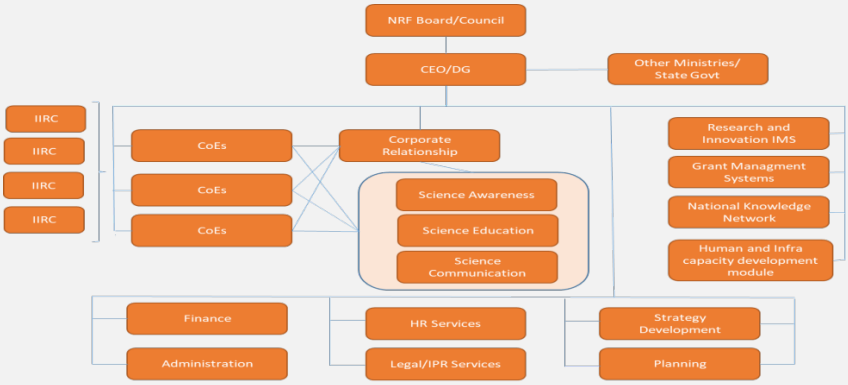


Figure 6.2

6.8 ROLES AND RESPONSIBILITIES OF CENTRAL NRF OFFICE (HUB)

6.8.1 To design a policy framework for establishing CoEs **(Binding based process)**
6.8.2 Establish an Information Management System for handling R&I grants
6.8.3 Funding high-quality R&I Proposals
6.8.4 Conceptualizing education and training programs for CoEs to be implemented in their respective areas through IIRCs
6.8.5 Providing Legal/ IPR services to CoEs and IIRCs
6.8.6 Collaborate with other ministries/State governments and corporate to channelize funding for projects developed by CoEs and IIRCs
6.8.7 Ensuring the access of National Knowledge Network to all CoEs and IIRCs.
6.8.8 Conducting online training sessions to enhance cognitive thinking skills of students through IIRCs. Periodic review of CoEs' performances
6.8.9 Provide fellowships, contingency and travel grants for talented youngsters

6.6. CENTRES OF EXCELLENCE (CoEs)

(25) CoEs will be established in already existing state/central/private educational institutions of very high repute and will be guided by central NRF policies. CoEs will focus on thrust areas of national importance. Thrust areas will be selected based on national and state missions through discussions. One CoE per thrust area/per state/or group of states depending on current capabilities. CoEs will engage local HEIs (including local universities and colleges) to establish 'Institutional Innovation and Research Councils (IIRCs)' (sub-spokes) in their respective institutions, similar to IICs established by MHRD in 950+ HEIs. CoEs will work closely with IIRCs for imparting high-quality training programs to students, researchers, and faculty in HEIs.

The institutions/states for establishing CoEs will be selected through a national level competitive bidding process based on institution's/state's ability to provide infrastructure support, technical expertise, investments and ability to attract contribution from local industries in the proposed thrust areas. More importantly, establishing CoEs as semi-autonomous units will also allow them to design their sector-specific programs, research projects, raise funding from external sources, create their venture fund, hold equity in start-ups, have flexibility in governance and hold the accountability of highest standards towards each stakeholder. Moreover, apart from the Central Government, even the State Government and Industries may also be the stakeholders in CoEs.
These CoEs will primarily focus on two very specific objectives:

- Conduct world-class research and innovation initiatives the chosen thrust areas
- Train very high-quality technical human resource of global standards.
- Identify and recommend projects for funding at pre-incubation, incubation and start-up level
- Jointly develop research projects along with state universities and colleges

To achieve these objectives, CoE will aggressively engage with local HEIs to establish a network of (sub-spokes) '**Institution's Innovation and Research Councils (IIRC**),' similar to IICs established by MHRD in 950+ institutions for promoting innovation. These IIRCs are expected to perform activities mandated by CoEs in their respective institutions in the stipulated timeframe and share the outcomes. As IICs established by MHRD are yielding promising results, one of the options could be of converting the already existing IICs into IIRCs by expanding their mandate and providing support through funding.

Through IIRCs, CoEs will work very closely with local HEIs and research community, especially for developing high-quality human capital. CoEs are expected to develop R&I ecosystem in their respective HEIs and also create a network of IIRCs which could be eventually leveraged for any nationwide R&I initiatives. This ecosystem will encourage, inspire, and nurture young students by exposing them to new ideas and processes resulting in R&I activities in their formative years. CoEs will also mentor local HEIs to develop high-quality research proposals which could be eventually funded through NRF R&I grants.

NRF will also act as a platform for collaboration among different stakeholders including Central Government, State Government, Medium, Small and Microenterprises (MSMEs), Higher Education Institutes (HEIs) and local industries.

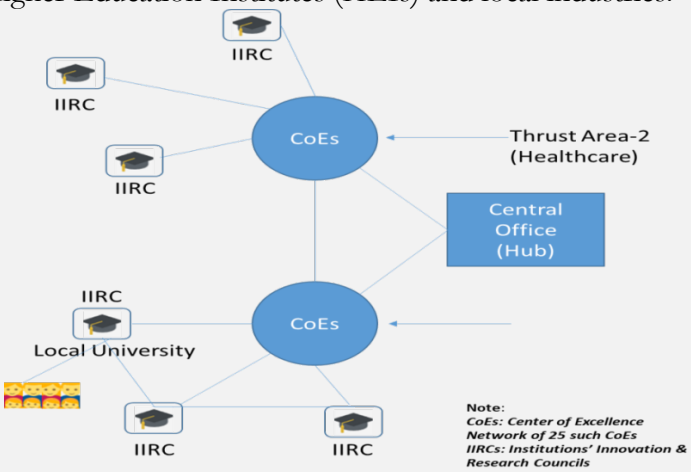


Figure 6.1: Hub and Spoke model of the NRF

6.9 ROLE AND RESPONSIBILITIES OF COEs

6.9.1 Develop thrust areas for each CoEs/State/or group of states

6.9.2 Collaborate with selected local universities and colleges to establish IIRCs for training HEI students in large numbers in the field of R&I

6.9.3 Work with local IIRCs/institutions/researchers to develop research proposals as per the thrust area

6.9.4 Identify scientific talent within the vicinity and connect with the relevant CoEs [e.g., if CoE (A) is focused on Healthcare but identifies a high-value talent in some other areas (e.g., Energy), then CoE (A) connects this researcher with CoE (B) which is focusing on Energy]

6.9.5 Work closely with State governments, allied agencies and relevant corporates to establish R&I ecosystem for supporting the thrust areas

6.9.6 Provide services, consultancy and handholding, especially to industry and allied agencies related to thrust areas

6.9.7 Collaborate with foreign institutions to conceptualize cutting edge research projects focused on thrust areas

6.10 THRUST AREAS

Thrust areas will be selected based on national and State priorities/missions. Thrust areas currently under consideration are Healthcare, Sustainable Habitat, Information, and Communication technology (IoT, AI, Cyber Security), Nanotechnology Hardware, Security and Defence, Environmental Sciences and Climate Change, Advance Materials, Energy, and Manufacturing as indicated in Table-1 (Based on IMPRINT program of

MHRD). NRF will also focus on key areas in Humanities and Social Sciences. Foundational training and research, across areas, will be common to all CoEs.

NATIONAL/ STATE MISSIONS	INDUSTRY RELEVANCE	IMPORT SUBSTITUTION	
Energy Security & Efficiency	Information & Communication Technology (IoT, Artificial Intelligence)	Manufacturing Technology	**Social Sciences and Humanities**
Environment and Climate	Nano Technology	Security and Defense	
Healthcare Technology	Advanced Materials		
Water Resources			
Sustainable Habitat			

Table 6.1: Indicative Thrust Areas of Centre of Research and Innovation Excellence (CoEs)

The proposed model will help in ensuring that the most urgent national issues (e.g., thrust areas under National Missions) are well-studied by researchers and that the latest research breakthroughs coming out of the NRF funded research are adopted and implemented by the policy makers for the benefit of the nation.

6.11 ROLES AND RESPONSIBILITIES OF IIRCs

6.11.1 Creation of vibrant R&I ecosystem within the institution based on the mandate given by CoE

6.11.2 Training of students on the fundamentals of science, research, and innovation

6.11.3 Develop better Cognitive Ability amongst HEIs Students

6.11.4 Establish Function Ecosystem for Scouting Ideas and Pre-incubation of Ideas

6.11.5 Start-up/entrepreneurship supporting mechanism in HEIs

6.11.6 Prepare institutes for the Atal Ranking of Institutions on Innovation Achievements (ARIIA) Framework

Under MIC, such councils have already been established in 950+ HEIs including technical, non-technical institutions and universities. These councils are functioning as IICs and are in the first year of their formation. These IICs can be easily restructured in IIRCs by broadening their mandate and providing them with additional funding support.

6.12 TIMELINES

1st Year
Establishing the NRF Division including the hiring of relevant staff
Call for EoI for setting up for the first set of 5 CoEs
Selection of Institutions/States for the first set of CoEs
Complete content development for Design thinking/ Cognitive skill development courses

Finalizing requirements and vendor for NRF Information Management System
2nd Year
Establishing 5 CoEs as separate semi-autonomous units
Launch for IT systems for monitoring CoEs engagements with IIRCs
Establishment of IIRCs in 1000 institutions
Launching training programs and workshops for HEIs students through IIRCs
Training 7.5 lakh HEIs students for modalities of R&I
Launch of Design/Critical thinking course for all HEIs students
3rd Year
Call for EoI/ Bid for 2nd Set of 15 CoEs and announcing the selected institutions
Announcement of NRF Grants and Call for Application
Announcement of NRF Grand Challenges and Call for Applications
Establishing Intellectual Property Rights (IPR)/ Legal cell
Announcement of NRF fellowships
Training 20 lakh HEIs students for modalities of R&I
4th and 5th Year
Call for EoI / Bid for 3rd Set of 5 CoEs and announcing the selected institutions
Completing the establishment of 25 CoEs
Ensuring a completely functional and vibrant NRF structure

Table 6.2: Timeline for implementation

6.13 TRAINING PROGRAM FOR COGNITIVE/DESIGN THINKING SKILLS DEVELOPMENT

The NRF Hub will also design exhaustive training programs (using online and offline mechanisms) for developing the design thinking/ critical thinking skills/ cognitive skills and scientific temperament among a large number of students in HEIs.

1. Salient features of this national initiative are as follows:
   i. Thirty-five hours online/offline course over MOOCs with three credits.
   ii. Multilingual content and Local Certification
   iii. Case study-based modules
   iv. Animation, videos, and graphics-based content
   v. Online blogs/ forums; recorded/ live video lectures
   vi. Creating a culture of creativity, experimentation, and exploration

2. The proposed course will focus on the following Modules:
   a) <u>What is Design Thinking?</u>
   - Defining Design Thinking as a problem-solving tool
   - What kind of challenges can be solved using Design Thinking as a tool

- What is the basic process of applying Design Thinking as a tool
- Case study to explain the process

b) How to visualize the problem

- Tools to develop a deeper understanding of the problem to be solved
- A framework to define the problem to be solved
- Visualization of a problem for better comprehension of nuances and details

c) How to understand the user

- Basics of Design Research
- Developing User Empathy
- Developing User Personas
- Developing User Mind-map

d) Design research methodologies

- Understanding methodologies such as Interviews, Focus Groups, Observation, Ethnography, Shadowing the user, Media Review

e) Calling out differences in thinking

- Explaining through specific examples of how a problem would be solved
- By using a conventional business mindset
- By using the Design Thinking methodology

f) What is Good Design: examples?

- Explaining what is Good Design through examples of Lifestyle, Healthcare, Energy, Infrastructure, Software

g) Introduction to Idea Generation

- Explaining idea generation tools such as What is; What if; What wows; What works
- Brainstorming & Co-creation methods

h) Great idea & how to select it

- Idea Selection tools & methodologies
- Alignment with objectives
- Alignment with users
- Technical & Commercial Feasibility
- Idea Testing & Selection
- Innovation Project Management
- Creative Problem solving also needs creative project management
- Myths & traps of conventional project management
- Tools & methodologies to manage innovation

IIRCs will operate at the sub-spoke level and will be governed under assigned CoEs and will be distributed across the nation. The IIRCs will comprise of members as President, convener, member, industry experts, bankers, investors, legal experts, faculty, and student.

6.14 FINANCING

The initial financing of the proposed central NRF office and CoEs will be through NRF centre.

Activity	Central Office (A)	Approx. cost per CoEs (B)	Cost for 25 CoEs (C)	Expenses (per year) (A) + (C)	Total expense for 5 years 5[(A) + (C)]
Establishment Cost	10	300	7500		7510
Operation Cost including workforce, travel, administration (Per Year)	5	25	625	630	2520
Grant for Funding Research projects (Per Year)	1200	--	--	1200	6000
Training programs and Science Education related activities		2	50	50	250
IT Infrastructure	5	1	25	30	150
IT Platform Development and maintenance	10	1	25	35	175
National and State Level events and conferences	5	1	25	30	150
TOTAL					**16755**

Table 6.3

6.15 MONITORING

NRF's performance will be monitored every quarter as per the best practices. Monitoring of the CoEs will also be done at the national level by NRF's Central Office through a Monitoring Committee. This committee will comprise of NRF officials, Directors of the institutions, industry experts, and subject matter experts. The Monitoring Committee will evaluate and monitor the performance of CoEs and will give its recommendations on the release of funds based on the success of implementation or progress of programs.

This Monitoring Committee will also recommend mid-course corrections to CoEs as and when required. The committee will also undertake a quarterly review of all activities related to the scheme, including a budget, implementation, and coordination with other missions/ schemes and activities of various ministries.

CoEs will monitor the functioning of IIRCs under them and will guide them routinely for various activities as per the schedule and activity chart. Performance and impact-based assessment will be done for the development of Joint Research Proposal, the quantum of students trained in R&I methodologies, idea competitions, IPR workshops, Leadership talk series, participation in hackathons, workshops on cognitive skills, design thinking, design competitions, etc.

6.16 CONCLUSION

a) National Research Foundation (NRF) will be set up as a 'Society' to fund, mentor, incentivize and build capacity for supporting global quality research and innovation across the country, primarily in universities and colleges.

b) The NRF will build a network of 'Centres of Excellence (CoEs)' for promoting world-class R&I, specifically focused on 'Thrust Areas' identified and aligned to national and state missions.

c) Initially, 25 CoEs will be established in educational institutions of global repute. Each CoEs will be a semi-autonomous unit, but they will administratively function under the central NRF office.

d) CoEs will aggressively work with HEIs in their vicinity to establish a network of 'Institution's Innovation and Research Councils' (IIRCs). Each CoEs will establish at least 40 IIRCs. CoEs will guide and handhold their IIRCs on R&I related activities. Through IIRCs, CoEs will also train students of HEIs in large scale on R&I fundamentals and modalities of global excellence.

e) NRF will be structured in unique 'Hub & Spoke' model, where 'Central Office' of NRF is the Hub while CoEs are the spokes and IIRCs are the Sub-Spokes. The model is similar to the network of NCC or Institutional Innovation Councils (IICs) established by MHRD's innovation Cell (MIC) for fostering the culture of Innovation in about 1000 educational institutions. Under MIC, 950+ such IICs are already functional, and these IICs can be easily restructured into IIRCs by broadening their mandate and funding support.

f) Selection of 'Thrust areas' for CoEs will be based on national/ State missions and will include relevant areas from Science and Technologies, Humanities and Social sciences.

g) NRF will be headed by 'Chief Executive Officer (CEO).' The CEO will be responsible for all the activities of NRF and will be accountable to the NRF Board.

h) The NRF Hub will closely engage with other funding agencies like DST, DAE, DBT, ICAR, ICMR, UGC, AICTE, TDB, TIFAC, NITI Aayog, private industries, and philanthropic organizations to ensure that projects aligned to the thrust areas of CoEs are also considered for funding by these agencies.

i) The NRF will provide a collaborating opportunity for other potential stakeholders including different Central Government ministries, State Governments, Medium, Small and Microenterprises (MSMEs), higher Education institutes (HEIs) and Local industries to work together for establishing of local R&I ecosystem in the indicative thrust areas.

j) The NRF will also be responsible for large scale training of students from all major HEIs on cognitive and design thinking skills using online/offline platforms.

k) CoEs will work very closely with governments to identify and engage potential multinational companies/industries and help them attract to their region so that an industrial hub in the given thrust area could be established or supported.

l) The total fund of Rs. 16,755 Cr is proposed for a period of 5 years.

CHAPTER 7
EQUIP Group 7: Employment & Entrepreneurship

BACKGROUND, NEED, AND OBJECTIVES

7.1.1. India is currently confronted with the scenario where about 8 million students pass out of degree courses annually, of which more than 6 million students remain without employment. The premier institutions like IITs, NITs, IIMs, a host of engineering & management colleges at the top end of the quality ladder, provide almost immediate employment to their students. Employment is a predicament for most of the 10,000 plus engineering colleges affiliated to AICTE, which are unable to secure a decent placement rate and are laden with a good proportion of unfilled seats as a result. Employment is a bigger predicament for the multitudes of management institutions that have spawned the country's educational landscape. Critically, it is the 40,000 plus general degree colleges, especially Government colleges, producing BA, BSc & B.Com graduates, housing the largest chunk of the student base, that is afflicted with the near absolute problem of lack of employment for students. The primary causal factor for this phenomenon is their being "not employable," or lacking in the basic skills that are required for employment.

7.1.2. The Employment – Employability gap is, therefore, a case where the demand & supply incongruity is not only one of numbers but that of quality and lack of orientation in the pedagogy based higher education curricula towards the requirements of industry & service sectors. The skill sets demanded by a growing and diversifying industry are not embedded in the education system across all levels. Hence there is an inconsistent situation where jobs do exist in sectors, but only for youth who are appropriately skilled for the workplace rather than for products of the general pedagogy. The absence of employable skills or gainful employment compels the youth into accepting any form of livelihood whatsoever for survival, thereby lowering both individual & national productivity along with the quality of life. Hence the country has been systematically losing developmental ground and the opportunity to transform its demographic advantage into a demographic dividend. It is time to accept the reality that the education system cannot continue with a one-dimensional classroom pedagogy and needs to be transformed in sync with the requirements of the job market and its functional expectation from the education system.

7.1.3. The absence of an organic linkage between education curricula and employment specifications has rendered general degree courses to be nearly outcome-less, except for meritorious students wishing to pursue higher learning or those intending to take up Government employment through competitive examinations. Given the low percentage of the former and the low success rate of the latter in a humongous Indian student base, the disconcerting fact emerges that the moderate achievers of the general degree system have scarcely any avenue for gainful employment, with their existing knowledge base not being in tandem with the market requirement. It is abundantly clear that the general degree curriculum calls for a comprehensive overhaul to align it with the pre-requisite skills for employability and be driven dynamically by changing industry needs.

7.1.4. Future Skills & Rate of Change in Technology

a) With advances in science and technology, especially in the areas of artificial intelligence, machine learning, and robotics, a new era of automation is around the corner. This automation of jobs would impact the demand for graduate jobs has people worried, wondering if it shall put them out of jobs. With machines being created to out-perform humans in various tasks, be it those needing excellent manual dexterity or cognitive abilities, the concern among the masses is fair.

b) Automation of tasks increases process efficiency by improving quality and speeding up processes simultaneously, causing a reduction in prices. This availability of improved, cheaper products and services causes an increase in demand, which further leads to more production, hence creating employment. However, we will see a shift towards skills that are high in demand. Here, while the automation of production may have left some people out of jobs, it would have added jobs in functions like sales, marketing, and operations. Thus, instead of completely taking away a certain number of jobs off the market, older jobs would be replaced with newer positions, requiring different skill sets. It has been established that activities that require creative and strategic thinking and emotional intelligence are less likely to be automated and are here to stay. Hence, it is imperative that we introduce changes in teaching curricula and pedagogy to work upon cognitive abilities and soft skills from an early age. Training and development programs for working professionals are equally important as they help people skill up, whether to move higher up the ladder or take a tangential route and make a career switch altogether. Continuous, life-long learning has emerged as the order of the day.

c) According to a study carried out by a leading HR research company, the skills with high demand in India were analysed over 1 lakh job roles and the following skills had high weightage for employability : English Comprehension & Communication (100%), Deductive Reasoning (62.31%), Inductive Reasoning (45.75%), Agreeableness (34.30%), Information Gathering & Synthesis (33.74%), Extraversion or disposition towards world, sensitivity (28.21%), Emotional Stability (22.88%) and Quantitative Ability (15.40%). Collectively these are also termed in other parlance as Life Skills, transferable skills, etc.

d) Also, the survey listed out the number of open job positions in various skills and job functions as a percentage of total jobs in the country. Leading the list are software & information technology (31%), customer service (9%), sales (12%), marketing (7%), core engineering (7%), general management (7%), analytics & consulting (4%), Accountancy (3%), operations management (1%) & others (19%).

e) With the entry of artificial intelligence, there are key job roles with direct potential for automation like Information synthesis and English comprehension (speech and writing recognition). Further, taking a job role-wise analysis the study pointed out the 'automatability' of various functions as follows: Accounting (67%), Analytics & Consultancy (35%), Core Engineering (27%), Customer Service (64%), Marketing (21%), General Management (14%), Operations Management (54%), Sales (39%) and Software & Information Technology (42%). Further, machine learning has enabled an analysis of processes and data to a very high degree of business facilitation, if preceded or accompanied by IOT in the particular sector.

f) Significant technology waves have therefore been generated over the past few decades but the wave to commence shortly in the world would seriously transform the service

sector & manufacturing sector processes and thereby the nature & scope of the employable skills demanded at the workplace. It is the pace of the 'wave engulf' that is relevant in the Indian context while deciding on a skilling –cum-educational content. India is a multi-layered society socially & economically, and Indian industry & service sectors are also beset by a technological dualism with varying adaptability speeds. There is a context that is relevant for the next 15 years, 10 years, 5 years and the next year itself, when it comes to program initiatives in employment opportunity creation for about 60 lakh graduates every year, spread over the landscape of the country with a predominance of tier II towns, cities, and semi-rural institutions.

g) While technology waves will continue with their huge impact on ready to adopt processes, mostly in the services sectors and widely in advanced manufacturing processes, there is likely to be a time lag, given the state of Indian industry and given the application based, manpower based and personal delivery based nature of innumerable job roles in various sectors of the Indian economy. There is a huge nuts & bolts segment in Indian industry and manpower based sectors like Tourism & Hospitality, Logistics, Beauty & Wellness, Healthcare, Marketing, Media & Entertainment, Retail etc., which would predominantly continue to source manpower that is trained in existing skill sets, with greater efficiency inputs but not to the extent of a technological wave, simply because the production processes are not data generating for machine learning & other disciplines to operate. The importance of non-technical courses for general graduates cannot be overstated owing to not only their aptitude but also the vast market segment that requires such skills in the existing market as well as the foreseeable future. In a recent convention, industry representatives had spelt out for 15 sectors, the current requirement of both technical & non-technical skills, both of which were required in large numbers and both of which were missing in Indian graduates. Both full time and short term courses in the enumerated skills need to be integrated into the education system itself so that the need for students to seek the skills from external private agencies is obviated. They are listed out in the table to follow:

Table 7.1.

SECTOR	COURSES SUGGESTED
Engineering and Manufacturing	• Short term courses on Automation • The foreign language certification course • Courses on energy efficient process • Data Analysis
IT & ITES	Certificate Courses in/Short Term Courses in: • Blockchain • Cloud Computing • Business Analytics • Data Analytics • Market Research • Architect Technology • Data Science • Data Visualisation • Big Data Analytics, Robotics, AI
Healthcare, Pharma, Biomedical & Medical Technology	Specialization programs in- • Healthcare professionals • Caregivers • Hospital administrators/managers

SECTOR	COURSES SUGGESTED
	• Bio-medical engineers
Sports and Wellness	• BSc. Dietetics / P.G Diploma in dietetics • Certificate course in sports nutrition • Certificate course in personal training • Diploma/ Certificate course in yoga
Education and Training	• Soft skills • English language and communication • ICT in education
Oil &Power and Energy & Natural Gas	• Robotics • Automation • Solar Panel installation • Electricity distribution and cable laying • Pipeline network and Oil/Gas Distribution • Grid connection and Earthing • Safety in handling Electrical Cables
Logistics	• Practical training in Logistics • Data Analysis and Data Management to support Logistics
Food Processing & Allied Services	Certificate programs in: • Processed food Entrepreneurs • Quality assurance Training for safety and hygiene • Food Security • Food Label and Brand Development • Food Packaging • E-Marketing techniques for Food Processing • Sensory evaluation Techniques for food product development
Hospitality, Tourism and Event Management	• Travel and Tourism (3 years course with a minimum of nine months of internship/on the job training) • Travel and Tourism (2 years course with a minimum of six months of internship/on the job training) • Shot tern courses in Data Analytics (6 months to 1 year) • Certificate course in Image Consultancy (3 to 6 months) • Certificate course in Personal Branding (3 to 6 months)
Retail, Fashion & Apparels and Gems &Jewellery	• BA or Post Graduate course in Gems and Jewellery • Diploma courses in Jewellery Business and Designing • B. Tech course should also include Jewellery Designing and knowledge of machines used in the industry
Infrastructure, Construction, and	• Safety Training Courses (For Construction)

SECTOR	COURSES SUGGESTED
Architecture	
Agriculture – Manufacturing and Services	• Micro-irrigation, dairy farming, remote sensing technology, poly house, small scale processes, precision farming, Logistics, transportation • Insurance loss surveyor- Field/crop surveying person • Marketing/Market intelligence – Market survey (short course)
Media, Broadcasting, Branding, and Advertising	• Outdoor marketing • Inbound & Outbound Marketing course • Course on High Digital Technology • VFX/Animation • Research & Analytic course on Consumption pattern
BFSI and Allied Services	• Investment advisor • Asset reconstruction • Credit Risk management • NISM Modules • Financial Service Associates

h) In the wake of the scenario and need spelt out above, the dominant imperative of the hour revolves around certain identifiable objectives-cum- approaches:

- Identification and profiling the jobs roles currently in demand and future skills over a 10-15 year horizon
- Consider the technological and knowledge advancements and their anticipated impact on existing jobs – preparation for the onset of information science in the medium to long term
- **Align the education system to industry & service sectors in a content driving and internship providing manner so that all knowledge advancements are captured dynamically into the education process**
- Integrate industry led skilling into non-technical higher education, notably general degree courses, so that classroom pedagogy-based instruction also makes room for hands-on, on-the-job instruction methods in skill sets demanded by industry/service sectors
- Targeting of educational institutions in tier-II cities and lower, with special focus on catering to moderate academic achievers – soft skills
- Counselling, Capacity building & awareness in higher educational institutions on a large scale to facilitate acceptance and adoption of skill based/internship linked education
- Massive expansion & capacity upgradation of the trainer base in the country to cater to the anticipated surge in demand
- **Involving industry & service sectors into curriculum design, apprenticeship and grooming students towards certification & employment**
- **Massive syllabus upgradation exercise for the education system with the introduction of information science (machine learning & data analytics), skill sets from various industry & service sectors that are conducted, monitored & certified by industry bodies**

- Introduction of courses, curricula and skill sets that are oriented to entrepreneurship after education
- Modalities/arrangements with Skill Providers and industry in workable models
- Targeting skill integrated education in 10,000 institutions in the country by the end of December 2020.
- Creation of a formal forum for industry-educational institution policy formulation/curricula preparation & updation
- Nature of preparation required for smaller educational institutions to gear themselves for skill-based education
- Revamp of existing B.Voc and other vocational courses - modernizing, upgrading infrastructure &making them internship based for greater relevance
- **Gaining insights from any existing international models in skill integrated education and considering adaptation to Indian scenario**
- Introduction of loan camps/venture capital camps for entrepreneurship at all levels of education similar to placement cell activity
- Tripling of the incubation centres for start-up activity in leading educational institutions – an approach, kind of spread & fund flow estimate
- Promotion of level II entrepreneurship activity to suit students of moderate educational institutions – the need for organizations like NIESBUD to be brought under MHRD administration and decentralized & integrated as "Entrepreneurship & Livelihoods Departments in colleges?
- Introduction of Resource Centres for Skills in Universities & Colleges through tie-ups with service providers or on contract basis
- PPP arrangements at various levels in the ecosystem of skills & entrepreneurship
- Fund requirement and projection activity –wise for a major initiative towards bringing skilling, entrepreneurship, and start-up culture promotion into mainstream education, spread across 10,000 colleges.
- NAPS/NATS linkage for 'on-demand' apprenticeship facilitation
- Creation of National Internship Portal that is networked
- Imparting components of Future Skills like machine learning, artificial intelligence, data analytics as compulsory courses into degree education, replacing the current optional course structure
- Compulsory introduction of Life Skills, Cognitive Skills, Communication Skills, and basic IT skills into the core curriculum of the college system by replacing certain outdated components
- External Affiliations and introduction of Transnational Standards into the Indian skilling eco-system
- Establishing an extensive student & faculty counselling arrangement for the college system to enable the transition in curricula & educational mode to be smooth and channelled into areas of interest and choice for the students.

7.2. ISSUES & REALITIES TO ADDRESS BEFORE THE EXERCISE

7.2.1. The Higher Education System has been comparatively aloof from the skills ecosystem so far. Its contribution is only 4% in offering skill training while MSDE contributes 58%. Moreover, MoSDE has not so far been involved in the higher education system despite the entire constituency for skilling and employment lying with MHRD. If skilling is separated from the higher education system any longer, then the alternative system in place now will not be able to adequately skill the workforce for present & future jobs

where high order information skills combined with life skills and dynamic job roles would be the order of the day.

7.2.2. ITIs and Polytechnics, despite ITIs receiving USD 280 million in 2007-08 for modernization, have not produced a skilled labour force for the country that meets industry need. Skilling requires to be brought into mainstream education to capture students with aptitude, who have otherwise been led to pursue conventional general degree courses purely due to lack of options. Skilling is not available as a widespread educational option that is recognized in equivalence with basic degree courses.

7.2.3. MoSDE caters to the 27% school drop-out segment from the education system for skilling and providing alternative career paths. Hence the skills that are imparted to school drop-outs are not of a high order and not suitable for employability at the next level due to the lower basic educational attainment and their inability to move higher up the skill ladder. Higher academic pathways also do not exist for such vocationally trained school drop-outs at a later stage.

7.2.4. Sharda Prasad Committee Report pointed out in 2017 how private training partners of NSDC have made a 'mockery' of skills training by doling out short term skill courses, some of them as short as eight hours. This is a natural consequence of a segregated skill system whose mandate is to churn out numbers but not quality. The current skill training partners are not higher education institutions nor are connected to them in any way.

7.2.5. The fresh attempt to create new Skills Universities in India may need to be supplemented with encouraging higher educational institutions also to impart vocational education in a big and integrated way. **An inclusive education system may be needed rather than an alternate system. This is all the more pertinent since UGC is the Regulatory Body for the University and college system and a mechanism most beneficial to the students can be worked out if current & future skills in demand, are integral to higher education curricula.** Continuous creation of a fragmented system of skilling could be counter-productive, leading to greater underemployment, apart from the huge loss of budgetary resources on duplication instead of synergy and tangential focus instead of inclusive focus.

7.2.6. The available college infrastructure, student base, a curriculum in need of employability inputs, supported by UGC's objective of ensuring employability of Indian youth, all point to an inclusive education system where current & future skills are a critical input.

7.2.7. India needs to derive lessons from global models. Countries like Australia, Korea, China, Switzerland & Germany have a clearly defined VET system where students with a lesser aptitude for general education are channelled into the vocational stream at the school leaving the stage. After that, a well-established VET system trains and grooms the student, aided by industry internship so that skills required at the workplace are obtained directly by students at the workplace. A three-layer system of vocational school, industry, and Government support the youth in the VET system. Industry shares the cost of vocational training with the Federal & State Governments through stipend provision and provision of tools and consumables to the students. There is also regulation for the industry to appoint only skilled personnel for jobs, something which is not mandatory in India and even not found desirable for sectors like the MSME. The maturity or nascent nature of the industry of a country will determine the level of skills demanded from the youth. The greater the industry sophistication, the greater the adoption of information

science & technology and hence, the greater the demand for sophisticated future skills. India is at a stage where information science enters with a lag into the industry, and while preparing for the landscape of the future, the country needs to orient its employability strategy towards a mix of the present and future, or else we lose an entire generation in between.

7.2.8. Skilling and higher standards of skilling, even transnational standards are linked with the standard of industry and service sector in India vis-a-vis global standards. Only that level of skilling is possible that corresponds to current industry standards. To facilitate higher skilling and greater mobility of skilled personnel, it is necessary to link it with the Make in India initiative, promote more joint ventures so that overseas partners will automatically train the Indian workforce to their requirements and technology. Skilling would become incidental if aligned with the Make in India process. Country to Country arrangements would need to be pursued by the Government in select sectors for the import of transnational standards into Indian educational institutions offering to skill with appropriate certification. This would lend mobility to Indian youth who are in large numbers for total absorption in India.

7.2.9. The Indian 'employability' scenario lacks a targeted ecosystem to address the issues in a specific manner. Education and skilling are functioning in a parallel, silo-oriented manner, where education system at the state and district levels carries the baggage of outdated, irrelevant curricula and the skilling system merely caters to school dropouts to impart low-level skills, which do not correspond to the needs of a dynamic industry. Over the decades, the Indian education system has been adding huge content to the curricula but has not been deleting or compressing outdated elements of pedagogy. This issue is required to be immediately addressed, and both skilling and education need to be bound together by the glue of employability so that segregated processes do not separate an identical objective.

7.2.10. Entrepreneurship in India is currently limited by capital is available only to children of business families. The current venture capital and private equity industry cater to a niche segment that is biased towards foreign companies, and genuine technological start-ups that are domestic receive little or no support. The key to trigger entrepreneurship is to create a vibrant Angel Investment Community. There is immense scope for entrepreneurship growth in India right down to the villages, which fails to take off due to lack of awareness of avenues, modalities to proceed and also an indifferent banking system. Perfect information flow and a responsible banking system will achieve a major jump in level II (in terms of cost and sophistication) enterprises in smaller towns and cities. There is a huge market that good supply can drive in all cities and which can be provided by micro-entrepreneurs. Given the different segments in income levels in India, there are suitable products and services suitable for smaller grade enterprise, with or without technological leverage.

7.2.11. All start-up companies require breakthrough technology to make products cheap enough for the Indian mass market. However, they currently lack access to understanding, patient angel investors whose basic approach is risk-taking. The bulk of the start-up companies are bound to fail, and hence, they cannot afford loan funds. Non-family angel equity funds do not exist in India and organizations like NSDC are not designed for angel funding and like most bank created funds, would only provide loan funding with promoter funding, etc. The risk of the venture is fully with the start-up entrepreneur, and hence, there is no ideal platform for funding imaginative and new ideas. The fact that

most Indian venture funds are manned by personnel from debt financing institutions lends that creditor approach and a mindset that also lacks investment gut instinct, to the problematic non-starter phenomenon.

7.3. VARIOUS ONGOING INITIATIVES & FRAMEWORKS

7.3.1. SHREYAS - Scheme for Higher Education Youth for Apprenticeship and Skills

a) This program envisages enhancing employability of the general degree students in higher educational institutions. It is a high priority of the Government of India. The UGC Quality Mandate has set a target of ensuring that at least half of the students passing out of the higher education system should find suitable employment on completion of their degree programs by 2022.

b) Aligning the education curriculum with the needs of industry and service sectors and promote an On- The- Job exposure to all students in skill sets of their choice and aptitude, where a combination of classroom and hands-on learning would equip students with professionally relevant skills, boost their employability and thereby contributing immensely to their self-confidence is the approach of SHREYAS.

c) Program is conceived for students in degree courses, primarily non-technical to introduce employable skills into their learning, promote apprenticeship as integral to education and also amalgamate employment.

d) The program attempts simultaneous implementation along two tracks, one is 'Add on Apprenticeship' (degree apprenticeship) where a student currently completing the degree program in May 2019, would be invited to choose a job role of their choice from a selected list of apprenticeship job roles given by the Sector Skills Councils of the MoSDE for which the Sector Skill Councils would link apprenticeship opportunities in industry & service sectors. The second track is 'Embedded Skill Courses' where special courses like BBA in Logistics, Retail, Hospitality, etc. would be developed for introduction into colleges in the forthcoming academic year. Five such Curricula have been sent to UGC for formal acceptance.

e) The B.Voc programs in vogue would also be redesigned to incorporate apprenticeship.

f) SHREYAS is in alignment with the National Apprenticeship Promotion Scheme (NAPS) with NSDC and MoSDE as partners in apprenticeship linkage and funding

g) More than 3 lakh students have given their demand for apprenticeship on the Shreyas portal we.shreyas.ac.in and the SSCs are attempting to locate a supply.

7.3.2. National Skills Qualification Framework (NSQF)

a) National Skills Qualifications Framework is a quality assurance framework which organizes qualifications according to a series of levels of knowledge, skills, and aptitude and the levels are defined in terms of learning outcomes which the learner must possess.

b) This framework also helps in shifting the emphasis on outcome-based learning in general and vocational space.

c) Here the learner can acquire the certification for competency needed at any level through formal, non-formal, and informal learning.

d) NSQF would be anchored and operationalized by the National Skill Development Agency to coordinate and harmonize skill development efforts of the Govt. of India and the private sector.

e) This framework is a nationally integrated education and competency-based skill framework that will provide for multiple pathways, horizontal as well as vertical, both within vocational education and vocational training and among vocational education, vocational training, general education, and technical education, thus linking one level of learning to another higher level.

7.3.3. Pradhan Mantri Kaushal Vikas Yojna (PMKVY) - 2015-2020. It is a program designed for school drop-outs and other categories and not for the students of the formal higher education system.

a) Short Term Training: Imparted at PMKVY Training Centres (TCs) is meant to benefit candidates of Indian nationality who are either school/college drop-outs or unemployed. Apart from providing training according to the National Skills Qualification Framework (NSQF), TCs shall also impart training in Soft Skills, Entrepreneurship, Financial, and Digital Literacy.

b) Recognition of Prior Learning Guidelines - Individuals with prior learning experience or skills shall be assessed and certified under the Recognition of Prior Learning (RPL) component of the Scheme. RPL aims to align the competencies of the unregulated workforce of the country to the National Skills Qualification Framework (NSQF).

c) Special Projects Guidelines - The Special Projects component of PMKVY envisages the creation of a platform that will facilitate training in special areas and premises of Government bodies, Corporates or Industry bodies, and training in special job roles not defined under the available Qualification Packs (QPs)/National Occupational Standards (NOSs).

d) Kaushal and Rozgar Mela Guidelines - PMKVY assigns special importance to the involvement of the target beneficiaries through a defined mobilization process. TPs shall conduct Kaushal and Rozgar Melas every six months with press/media coverage.

e) Placement Guidelines - Link the aptitude, aspiration, and knowledge of the skilled workforce it creates with employment opportunities and demands in the market.

f) Monitoring Guidelines - To ensure that PMKVY TCs maintain high standards of quality, NSDC and empanelled Inspection Agencies shall use various methodologies, such as self-audit reporting, call validations, surprise visits, and monitoring through the Skills Development Management System.

(Source:http://pmkvyofficial.org/App_Documents/News/PMKVY%20Guidelines%20(2016-2020).pdf)

7.3.4. B.Voc, D.Voc and M.Voc Programs run by UGC

There are currently more than 440 higher educational institutions in the country offering B.Voc, D.Voc, and M.Voc courses. Such programs began in 2015 and 2016, and in the year 2018-19, about 30,000 students in the country have enrolled for such programs. Dayalbagh Educational Institute is the leading provider in this segment with about 18 B.Voc programs in various sectors. A notable feature of the B.Voc programs is their 100% placement record and industry directly involving itself in the curriculum.

7.3.5. Ministry of Skill Development and Entrepreneurship

To bridge the industry-academia gap – National Skill Development Council (NSDC) has developed a model to integrate skill-based training into the academic cycle of the Universities. These are based on National Occupational Standards set by industry through sector skill councils. The job roles offered are designed to be progressive in nature – from Level 5 – level 7 on National Skills Qualification framework. The key highlight of the model is as given below:

a) Based on the state skill gap report – identification of Sectors and job roles

b) Development of implementation model and Integration into time table as per university norms

c) Training of Trainers by Sector Skill Council

d) Curriculum Alignment and Capacity Building workshops

e) Student orientation sessions to take an informed choice of sector/job role based on career aspiration
f) Standardized Training Delivery by NSDC Training Partners
g) Internships and On- the – job Training
h) Assessment and certification by Sector Skill Council
i) Last Mile Employability and Entrepreneurship Opportunities for the students

NSDC is working with 21 Universities, UGC and AICTE. By way of conducting assessments, it is catering to more than 1200 colleges and 400 community colleges across the country.
(Source: https://www.msde.gov.in/higher-education.html)

7.3.6. Make in India

'Make in India' recognizes 'ease of doing business' as the single most important factor to promote entrepreneurship. It is a major new national program of the Government of India designed to facilitate investment, foster innovation, enhance skill development, protect intellectual property, and build best in class manufacturing infrastructure in the country. It is being led by the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India. The Make in India program is very important for the economic growth of India as it aims at utilizing the existing Indian talent base, creating additional employment opportunities and empowering secondary and tertiary sector.

7.3.7. Public-Private Partnership (PPP)

a) Skill development initiatives in India have traditionally been led by the government, starting with the establishment of the Industrial Training Institutes (ITIs) in the early years of post-independent India to provide a skilled workforce for meeting the needs of the country's fledgling industrial sector.
b) Conscious of the need to involve the private sector in the modernization of the ITIs, the government in the early 2000s decided to embrace the concept of public-private partnership in the ITIs, with the necessity for the PPP approach. Out of 1,896 ITIs, during the financial year 2005–2006 (April 01, 2005 to March 31, 2006), it was decided to upgrade 100 ITIs through domestic resources, 400 ITIs with World Bank assistance and, significantly, the remaining 1,396 through the PPP mode.
c) Different ministries, such as the Ministry of Textiles and Tourism, launched their version of PPP projects. Also, Ministry of Rural Development, as well as Ministry of Housing and Poverty Alleviation, announced schemes of livelihood, by inviting the private sector to provide skill-based initiatives. Over some time, multiple ministries had a variety of programs, some run by the centre and others in partnership with the states. Simultaneously, the states also started skill development programs in the PPP mode.
d) It is currently imperative that Indian educational institutions either individually or jointly through an SPV formed by groups of institutions explore PPP arrangements either directly with the industry group or through their bodies.
(Reference: https://core.ac.uk/download/pdf/81098139.pdf)

7.4. A QUICK GLIMPSE AT INTERNATIONAL MODELS

7.4.1. Australia – The VET system is nationally regulated to conform to a national quality framework. The system offers a tertiary education pathway designed for acquiring workplace specific skills. Training may take place in a classroom, online, workplace which may be a full time or part-time.

7.4.2. Germany - follows a dual VET system with theory and training combined in a real work setting. In-company training and support to the trainees by the Trade Unions ensure a skilled labour force. It is mandatory for industry to employ only skilled workforce.

7.4.3. Korea-, VET provided across schools, colleges & polytechnics (2-3 years) by the Ministry of Education. Further, the Ministry of Labour & Employment offers formal & informal training to unemployed and on-the-job training to existing employees. The Academic Credit Bank System, a central agency, recognizes diverse learning experiences via degrees gained at school and cumulatively aggregates them. Robust National Competency Standards ensures that the TVET system provides updated skills to meet the labour market needs.

7.4.4. China - Vocational education is introduced at junior secondary school (12-14years old). A test called the Zhongkao test is conducted at school leaving stage, and the scores obtained in that test determine entry in mainstream education or vocational streams. Training for students includes apprenticeships, on the job training, entrepreneurship training, pre-job training. There are several training providers and options open to students such as Vocational junior secondary schools, Senior Secondary vocational schools, and Secondary specialized schools offering five-year advanced VET, etc.

7.4.5. Teachers at VET schools are provided with vocational certificates in relevant trades apart from the requisite degrees and are required to undergo one mo of nth industry training every year.

7.4.6. Switzerland - A three-layer system of Government, Vocational School and Industry support the vocational education system. Small and large companies support 15 to 19-year-old apprentices who learn all aspects of the trade required for a career. Like China, students take an early decision in their life between general and vocational education, and there is an entire supporting architecture for both.

7.4.7. A well laid out institutional and regulatory architecture for vocational education exists in all countries, and a similar structure is required in a country with a vast student community like India where youth with varied abilities can opt for suitable vocations, without forcible entry into the general stream and avoid achieving moderate success or failure in the process.

7.5 STRUCTURAL / REGULATORY ARRANGEMENT REQUIRED

7.5.1. A formal vocational education pathway integrated into the to the college system with credit structure applicable to both

7.5.2. Intensive Pre-counselling and screening test to categorize students in the general and vocational stream. Immediately after schooling. Awareness generation about the streams of vocation to be comprehensive & necessary

7.5.3. An exclusive Vocational education stream to also exist, grow and impart industry driven, industry relevant and internship embedded skill education at various levels, with communication skills, cognitive skills, and other life skills incorporated into their learning

7.5.4. UGC to have a skill vertical to devise a separate regulatory framework that is customized to VET and also work in a quick timeframe to accord full recognition to all internship & skill courses that are either offered as optional courses or embedded into general education.

7.5.5. A mechanism to develop & update VET curricula to the changing needs of industry & new era jobs is essential. While industry connects, either directly or through Sector Skill Councils would ensure a degree of correspondence, future skills which may not have come in the radar of the Councils need to be gauged in advance through around the year expert Group in the education system or Government.

7.5.6. UGC to revamp degree curricula to incorporate skill courses with credits

7.5.7. Degree program eligibility criteria defined by UGC/AICTE does not allow admissions through Recognition of Prior Learning. Equivalency to X & XII is also not yet established

7.5.8. Industry to be a tripartite partner in the process of skilling with Government & institutions and a formal mechanism for the same may be devised

7.5.9. Separate guidelines for appointment of teachers in skill universities and colleges & new teaching cadre of industry experts

7.5.10. A Regulation is essential that industry must employ a vocationally certified workforce, and the industry would advertise skill sets required and not degrees obtained.

7.6. ACTION POINTS / STRATEGIES FOR IMMEDIATE IMPLEMENTATION

7.6.1. All activity must commence with comprehensive and empathic Career Guidance and Counselling sessions for each student, so they understand their preferences, aptitudes, potential, and define their career path.

7.6.2. Counselling and training are also required for Heads of institutions and faculty members to re-orient their thinking and approach to a vocation integrated approach to education. The recruitment of new faculty is to be based on industry experience and not just academic degrees.

7.6.3. A massive curriculum redesigning exercise headed by the MHRD and UGC is to be immediately initiated. In all colleges the content may be modified and tweaked to teach mandatory courses on 21st century skills, transferable skills, Communication skills, English, Digital skills for the future, Cognitive skills (critical thinking, problem solving, ability to learn), Non-cognitive skills (empathy, teamwork, creativity, collaboration) Citizen skills and life skills. There may be no college curriculum in general degree courses without these skills. Machine learning & advanced information science subjects may be introduced into curricula based on existing learning levels of students/colleges and scope for absorption.

7.6.4. Transferable skills are better learned through project/group activities to be centred around major National Missions like Smart Cities, Swachh Bharat, Make in India, Doubling Farmer Income, etc

7.6.5. Making internship compulsory during college education and working towards ensuring a facilitative environment for such internships by the Colleges and State agencies. Capacity building and promotion of such interaction between all stakeholders are required to be carried on constantly in the first two years to build a certain trust and relationship with industry. If industry or sector skill councils run the skill portion of the curriculum, then such internship arrangements become automatic.

7.6.6. Introducing in a gradual but steady way, the teaching of Machine Learning / Data Science courses across the University system as compulsory papers and start new B.Voc courses in Data Science / Machine Learning immediately. One-year diploma courses to be also introduced into the college system. Such courses in Information Science can also figure as minor options to be taken by general degree students. The new skills of the coming era are a combination of old ones, woven into intricate analytics.

7.6.7. Creation of a National Internship Platform with the student and employer in a first interaction, which would also facilitate an indirect network effect involving alumni, college placement offices, job sites, and Ed tech providers. Such a platform would expand the scope of internship to a huge scale. Any existing portal also can be worked upon to achieve a comprehensive upgrade through a networked approach.

7.6.8. MHRD to pursue extension and addition to ongoing incubation work in HEIs and work for provision of tax incentives to LLP (Limited Liability Partnership) firm investors.

7.6.9. Internships need to be promoted most conveniently, appropriate to the institutions, area, hinterland development, and level of the students. Such internships can be short duration (one to two months during summer break), and this would help students discover the

world of work and increase their employability, irrespective of their being paid or unpaid. Internships could also be done locally (through local MSME network). It is necessary such internships are assessed, made credit based and deliverables based, with specific assignment. In the event of logistic difficulty or any other issue, internship tie-up could also be done as a project or a problem statement given by local industry or MSME to the student.

7.6.10. **VET System** -At the end of the schooling stage there needs to be introduced nation-wide test I,.e. a Vocational Entrance Test to determine entry into the vocational stream, similar to the practices in China, Switzerland, etc. Other countries have a parallel, well-structured VET system that is robust, industry-driven, and working towards aligning student education with industry job needs. A similar VET system is necessary for India to define standards for content, curricula, infrastructure, trainers, and assessments of skill courses in line with industry needs and association with industry. The present vocational education system in India, due to an indifferent and less than adequate approach, suffers from low dignity and aspirational levels and carries a social stigma for the students, which needs a qualitative transformation, since vocation is the direct route to employment, as opposed to general degrees. All future skills are nothing but tools and definition-wise constitute vocations themselves, and hence dissolution of such social stigma is possible only by establishing a comprehensive architecture and place for vocational education. **Similar to Councils that exists for architecture, medicine, and even law, a separate Council, namely Skill Council of India may be created for the education system, which can prepare specific guidelines about this sector. As an alternative, but less desirable one, the UGC would need to set up a separate vertical for Skill Education to specially cater to the vastly different landscape of vocational education, which is also being funded by UGC at the moment but not being governed in the manner required.**

7.6.11. Introduction of elective skill courses during graduation through service providers & Govt funded coupons, like in Gujarat. Such courses must be recognized and integrated for credits. It may not be possible to create an entire cadre of internal skill instructors in all colleges of the country overnight and given priority to usher students into the supplementary vocational system, the services of existing service providers are required.

7.6.12. Introduction of internship/apprenticeship driven skill embedded degree courses like BBA in sectors like Logistics, Retail, Media & Entertainment, IT & ITES, etc. which will be more attractive than conventional degrees. This will gradually lead to the creation of college-based vocation-integrated employee base fan or industry where the entire content can be groomed towards industry requirements, with all the attendant technological changes that emerge over time. The Introduction of one-year diploma courses based on the accurate market requirement of skill sets/local economic clusters is also imperative.

7.6.13. Vocational / Professionalise existing degree programs by preparing industry-relevant curricula, integrating internships & apprenticeships. Skill-based degrees are not to be limited to B.Voc. The Choice based Credit system may be modified by both UGC and the Universities alike, to accommodate skill course choice and due credit may be given after industry or industry body assessment.

7.6.14. Streamlining of B.Voc program by introducing compulsory internship and introduction of more diversified courses based on skills in demand, standardizing the content and corresponding credit framework. An expanded B.Voc structure may be visualized with full recognition by both academia and industry, which contains courses on the most contemporary skill sets required by industry and service sectors. All vocational courses may be aligned to high growth sectors & their curriculum dynamics in the form of both short term & longer-term courses**.**

7.6.15. A paramount necessity is an introduction of Reforms in Labour Laws to mandate and if possible, incentivize industry to hire only vocationally certified students as workforce, to collaborate with local colleges for joint projects and to partner in skill training, faculty training & internships/placements. A system of internalization, I.e., emphasizing providing jobs to local students has to be emphasized to the industry as part of the legal reforms.

7.6.16. The immediate need is to create a cadre of mentors at the college level to facilitate Entrepreneurship Awareness and Development Programs. Further, electives on entrepreneurship must be a part of a degree course. The creation of curriculum on entrepreneurship can be carried out with help from EDIs, MSME DIs, etc. & international experts, to cater to differently graded levels of colleges

7.6.17. Synergy may be sought with existing organizations like NIESBUD, Banks, CSR units of top Corporates, etc. in content, instruction & linkages in the area of entrepreneurship for colleges in tier II towns and below.

7.6.18. An exercise for doubling of High-end incubation centres in top Institutions and the creation of micro- incubation labs in colleges/universities may be implemented by Government immediately.

7.6.19. Handholding and mentorship of potential start-ups in universities are essential with funding for the pre-incubation system. A comprehensive national start-up policy for Universities / HEIs is required.

7.6.20. The creation of an ecosystem for Level II start-ups in towns, semi-urban areas based on local growth structure is very important. A connect with Government promotional schemes, conducting loan camps of banks in Colleges akin to placement camps, etc. are needed. Hackathons must be held periodically over Entrepreneurship oriented problem statements. Internships for entrepreneurship students should also centre around studying the demand environment for new ventures (district, village, town, marketplace). All colleges taking up entrepreneurship as a discipline must be closely mentored by the Government, industry, and banks. PSUs may be advised to apportion their CSR funds for funding start-up ideas in smaller towns.

7.6.21. An exclusive, professionally run Centre for Employment & Entrepreneurship is necessary for every higher education institution for student counselling arrangement, internship sourcing, providing market-based inputs on employment, entrepreneurship/start-up ideas & forward linkage. There can be either an individual centre for every institution or one Centre for every 3-5 institutions in geographical proximity. These Centres must be manned not by college teachers, but HR professionals contracted from the market.

7.6.22. The role of corporate CSR is required to be explored to the maximum as most corporates, especially the PSUs are unable to meet their expenditure obligations under CSR despite skilling being a priority in their activities. A program to identify 10,000 corporates in the country and assign asset of degree colleges to each may be undertaken with the guidance and support of Ministry of Corporate Affairs so that both internships and funding for skills can be addressed in one go.

7.6.23. The building of a National Internship Platform is an immediate necessity and needs to be done in a given and urgent time frame. Similar, only the introduction of Machine Learning courses is an absolute necessity, and at least 50 different skill domains have to be identified and readied for the offer to college students. An effort has to be made to complete the definition of the curriculum by July 2019 to enable their adoption by colleges. As far as the Internship Platform is concerned, with a projected cost of about Rs. 20 crore at market rates and with the possibility of building the platform with NIC at a lesser cost, the following timeframe can be contemplated for the creation of the platform :

Table 7.2. Implementation Gantt Chart for Internship Platform & Machine Learning Courses

Task Name	April 2019	May 2019	June 2019	July 2019	Aug 2019	Sep 2019
MHRD initiates project						
Assembling Project Team						
List 50 skill domains						
List Mach learning topics						
Defining curriculum						
Developing Architecture for Internship Platform						
Finalize architecture with stakeholders						
Define Amendment to section 10 the of Income Tax Act						
Fine tune Section 10 of Act with Finmin						
Stakeholder approval on Section 10 Amendment						
Build Internship Platform Prototype						
Unveil Internship Platform to all Stakeholders						

7.7. LISTING OUT PROGRAM INITIATIVES

7.7.1. Following the objectives and policy imperatives spelt out in the preceding paragraphs, the action plan over the next five years towards addressing the needs of the student community and their employability are given in the following table, with a more detailed year-wise break up of outputs and funding needed in the Annexure-2.

Table 7.3.

Sl. No	Activity/Initiative	Details	Grand TOTAL (over five years) (Rs. Crore)
1	Industry ready, sectoral/future skills of one-year duration in Degree Course	10,000 colleges, 100 students per college/year@Rs.20,000 per student. Courses to be offered in the college by private/ professional service providers in evening/ vacation time	8000
2	Vocational Curriculum reform & Internship Platform	All India Working Group with State/Industry involvement, redesign of pedagogy-based curriculum to employable standards. 100 courses to be developed, embedded courses;	30
3	Capacity building	10000 colleges @ Rs. 10,000	10
4.	Assistance to Skills Centres of Excellence	(10) CoEs @ one for each skill	100
5	Assistance to B.Voc	5000 colleges @ Rs 25 lakhs/college	1250

Sl. No	Activity/Initiative	Details	Grand TOTAL (over five years) (Rs. Crore)
	Institutions for Infrastructure		
6	MOOCs vocational courses	200 courses @ 15 lakhs	30
7	Counselling centres in 10,000 colleges	One counsellor per college @ Rs 50,000 per counsellor per month	3000
	Total		**12420**

7.7.2. Modalities of Program Initiatives

a) Industry ready, sectoral/future skills of one-year duration in Degree Course

Over four years, 10,000 colleges at the rate of 100 students per college per year would be assisted in offering industry domain skills as well as future skill in one-year courses. Such courses would be organized by the college by involving private service providers with expertise in the area and experience in skilling. The college would issue an Expression of Interest and engage the service provider. Government assistance @ Rs 20,000 per student would be paid, and the State Governments are expected to share an additional sum in the ratio applicable to centrally sponsored schemes. Anything further by way of the additional cost of the service would be recovered through enhanced fees.

b) Vocational Curriculum Reform & Internship Platform

A mega exercise involving UGC, Central, and State Universities, AICTE, etc. in the area of curriculum reform to integrate skill courses of various domains into the general education system would be undertaken, and a formal, universally acceptable Degree & Credit structure for embedded vocational courses would be evolved on a priority basis. Simultaneously, an Internship Platform that networks all the stakeholders would be developed, again on a priority basis through a professional agency.

c) Capacity building

Every college offering skill embedded courses requires professional trainers. A massive exercise of the nature proposed would entail the existence of a vast number of trainers all over the country. Hence, a capacity building exercise to train and re-skill existing and potential trainers is necessary to generate trainer capacity commensurate with the enlarged requirement. A sum of Rs 10 crore will be provided for 10000 colleges by the NSDC common norms of Rs. 10000/trainer.

d) Assistance to Skills Centres of Excellence

In many domain areas of skilling, there are emerging institutions performing creditably in terms of vocational training and which, in the future scheme of things, will be required to grow into Centres of Excellence to have in-house upgraded facilities and also undertake mentoring of numerous other institutions. It is necessary to create at least one Centre of Excellence in each skill area so that it can continuously absorb and disseminate the latest standards of skill training as per the demands of the industry. A sum of Rs.100 crore will be earmarked for such an initiative of setting up ten Centres of Excellence.

e) Assistance to B.Voc Institutions for Infrastructure

There are more than 400 institutions under UGC and several Deemed Universities involved in skill training. The B.Voc/Diploma Institutions have been undertaking employment based skill education and are facing constraints in infrastructure & equipment. To cater to the enlarged demand, these institutions, as well as hundreds of others offering such skilling across the country, would require some basic assistance for classroom and laboratory facility. This will enable them to meet a portion of the initial capital cost while generating the

recurring expenditure from their operations. A sum of Rs.1250 crore will be earmarked for this activity @ Rs 25 lakhs per institution.

f) MOOCs vocational courses

The classroom content of all the courses can be effectively captured into MOOCs format so that wider and repeated dissemination is facilitated and greater numbers of institutions are benefitted. In keeping with the current cost of creating MOOCs content, a sum of Rs.30 crore for about 200 courses is being earmarked.

g) Counselling centres

The entire gamut of initiatives being envisaged, i.e., Vocationalisation, entrepreneurship, internship, industrial linkage, etc., constitute a new dimension to general Degree Colleges, especially in Tier II terms and lower. The lack of awareness on the part of both students and faculty as well as the necessary orientation to accept employment-based skilling as being integral to education is an issue which can be addressed by effective counselling. Such counselling is not only required initially, but the service needs to be extended towards internship tie-up, start-up linkage, market information assistance, identification of student vocational aptitude, etc., for an effort towards employment-oriented education to be successful. Every college requires a dedicated counsellor who is professionally qualified and trained so that the institution obtains effective inputs in the areas mentioned above. A sum of Rs.3000 crore is being earmarked over five years for assistance to 10,000 colleges to have in-house counsellors. Remuneration per counsellor will be Rs. Fifty thousand per month, and there would be one counsellor per college.

7.8. EXPECTED OUTCOMES

7.8.1. Over five years, with time-bound implementation, the measures envisaged can be expected to transform the Indian education system considerably and would yield the following outcomes:

- **a)** Vocational education will become an integral part of the higher education on a system with mobility pathways. A full-fledged implementation & regulatory architecture would be established for vocational education.
- **b)** Aligning education with the industry at degree level in 1000 plus colleges in a year will increase the employability of college students.
- **c)** Alignment with industry would ensure that technological changes in industry & services would percolate the to the skilling ecosystem directly.
- **d)** Moderate achievers in education would have robust employment avenues through channelization into skilling at the right moment.
- **e)** Entrepreneurship would originate from a decentralized level & move upwards.
- **f)** A big segment of graduates will align with future skills in a demand-driven manner with Information Science being integrated into the basic curriculum of colleges.

7.9. MONITORING OF THE EXERCISE

7.9.1. Sector Skill Councils/Training Partners to give quarterly feedback of industry & training progress in respect of skill embedded courses

7.9.2. State Government Nodal Officer to track progress with Principals of all colleges

7.9.3. UGC/MHRD Dedicated Cell to carry out quarterly reviews with State Officials and Principals – one officer for 4 States

7.9.4. All reviews to focus the on the number of skill integrated courses college-wise, student numbers, student internships created, curriculum appropriateness for jobs and final employment generated

7.9.5. Entrepreneurship monitoring to focus on data, information & awareness created in college, access created to entrepreneurship orientation & platforms and bringing start-up financiers to college level

7.9.6. Progress in the creation of a Tier II start-up funding system will be monitored by designated EDI contracted by Government

7.9.7. National Internship Portal will be self-monitoring with MHRD or Industry taking the monthly review as per the pre-specified parameters

7.9.8. Apex Committee under Minister, HRD would annually review the program and provide policy inputs/ mid-course correction strategies

CHAPTER 8
EQUIP Group 8: Using Technology for Better Reach

8.1. PREAMBLE

Quality of education in reaching out to unreached, is the main theme of Education Quality Upgradation and Inclusion Program (EQUIP), as embodied in its very name. Proposed outcomes outlined in the brief description of the ten groups constituted to suggest actionable plans, provide some details of the expectations. In any case, 'Quality at Scale' remains the main motto. The group on Technology for better reach has kept this theme in focus while drafting the report.

It is important to reiterate that the term 'quality' of education must apply to the final achievement of each learner. Thus, the extent to which the higher education ensures greater level of knowledge gained, its meaningfulness, its present applicability, practical skills acquired in the process of learning, the relevance of the degree obtained, and acceptance of such a degree by the society and industry, remain main outcomes. Only these denote the empowerment experienced by the learner. The measures used by the higher education system have to necessarily focus on various aspects on 'inputs' provided to a learner because these (and perhaps only these) are easily measurable. These do define the opportunities created by the system but do not necessarily ensure optimal learning by each learner. While working on this report, the group has attempted to ensure that aspects of quality of learning are incorporated in the proposed action plan.

Technology has been globally used for many decades to enhance the effectiveness of higher education, its current avatar being the Massive Open Online Courses (MOOCs). India has been an early adapter of this approach. Many platforms and courses thereon have been launched in India since 2013. Today SWAYAM represents a truly large-scale national effort. A major issue concerns the quality of actual learning that happens through MOOCs, for that depends entirely on the quality of time and effort spent by an individual learner during a specific offering of a MOOC which he or she attends. There are associated issues of building components of skills and practice through labs and tutorial sessions. Finally, there is a skewed distribution of technology adoption in the country. Technical and professional institutes have been early adopters, leaving the Arts, Commerce and Science Institutions far behind. Institutes in some large states such as UP and Bihar lag behind institutes in the rest of the country. Further, students from socially deprived classes face greater impediments to proper adoption of technology.

It is obvious that without a large infusion of appropriate technology in the teaching-learning processes of our higher education, quality at scale cannot be achieved. The group has endeavoured to provide a framework of proposals. These permit rapid and coordinated deployment of such interventions, building on several excellent national initiatives already undertaken and are in progress.

8.2. REACHING OUT TO THE UNREACHED – GENERAL APPROACH

8.3.1. Achieving Scale of Reach

We begin by enumerating the scale. From the current GER of about 25.8, which corresponds to about 3.66 crore Indians. There are about 50,000 (more than 40,000) Institutions (universities, colleges, stand-alone). A total number of teachers at present is estimated at 12.85 Lakh. Taking the GER to 52 in five years will imply doubling the number of students in HE to over 7.3 crores. It is not clear how the number of Institutions and the number of teachers will increase. These cannot surely increase in institutions, and a bit of substantial increase in teachers can be safely assumed. This group estimates that there are likely to be 60,000+ institutions and about 20 Lakh teachers in the system. The group expects a substantial increase in enrolment of open universities, and desire that these included in the early stage of technology induction.

As mentioned earlier, Technical and professional Institutes have been at the forefront of technology adoption for education. Several Teaching Learning Centres (TLCs) under Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) have been established. Through the outreach programs under T10KT by IIT Bombay, under SWAYAM, both by NPTEL and UGC, over 4000 Higher Educational Institutions are intimately connected with these institutes (500+ Remote Centres with IITB and 2150+ Local Chapters with IITM and 1600+ Local Chapters with UGC).

To scale up the reach of digital initiatives, it makes sense to strengthen these centres and also set up DESCs (Digital Education Support Centres). In the next five years, the DESCs would be located in 1000 Higher Educational Institutions in the underserved regions, run on PPP mode. They would act as the focal point for the adoption of all the digital initiatives in their respective Institution and also support and hand-hold other neighbouring institutions.

8.3.2. Research and Invention

Several premier Institutions, including major IITs, have significant activities in Educational Technology (ET). Continuous, high-quality research and development activity in the field of ET is a MUST if India has to reach and remain at the forefront of innovation and adoption in ET. We strongly suggest that Centres of Excellence in ET be established at 5 to 10 institutions in the country. It is in such places that new innovative ideas will emerge, and which can be prototyped, experimented, and made available for quick integration with ongoing activities at scale.

8.3.3. MOOCs and their Conduct

The stress on the design of high-quality MOOCs is important. Currently, there is no formal mechanism to certify the quality of such design, before the course is rolled out even for the first time. Secondly, there are neither any guidelines nor any incentives for the proper execution of each offering of a MOOC. It is to be noted that an individual learner learns only when she or he spends quality time in understanding the subject during the engagement of an offering of a course. Thus, the annual conduct of every offering of a MOOC is thus far more important to learners than just the quality of content and delivery mechanisms put in place. Currently, there is no focus on such engagements. Another important issue is the lack of recognition of MOOCs credits as part of a regular degree program. In spite of provisions made by AICTE and UGC to

facilitate such credit transfers, wide-spread acceptance and assimilation of these provisions need to be ensured.

8.3.4. Teacher Training

Throughout the world, a blended MOOCs approach is being increasingly adopted, in which a teacher uses face-to-face classroom engagement for discussions and problem solving, using the online course as the main plank. Pedagogies such as flipped classroom are being adopted due to clear evidence of enhanced learning. Learner centricity of a MOOC is now considered a requirement of a MOOC and each of its offering. Our teachers in higher education do not have a mandatory orientation program on the basics of teaching-learning processes, and certainly, do not have a proper understanding of how to use technology and associated pedagogy effectively for ensuring better teaching. There is an urgent need to train teachers through well-designed programs, as also to offer specially designed capsules for all students to make them appreciate how to benefit from technology intervention maximally.

8.3.5. Basic Training to Students

Our students also do not know how to maximize their learning by adopting technology-based education. Some basic training for all students is essential. This should be attempted through a specially designed MOOC, which should be freely made available to all learners. Teachers should additionally explain the advantages of using Ed-tech

8.3.6. Relevant Technologies and Methodologies

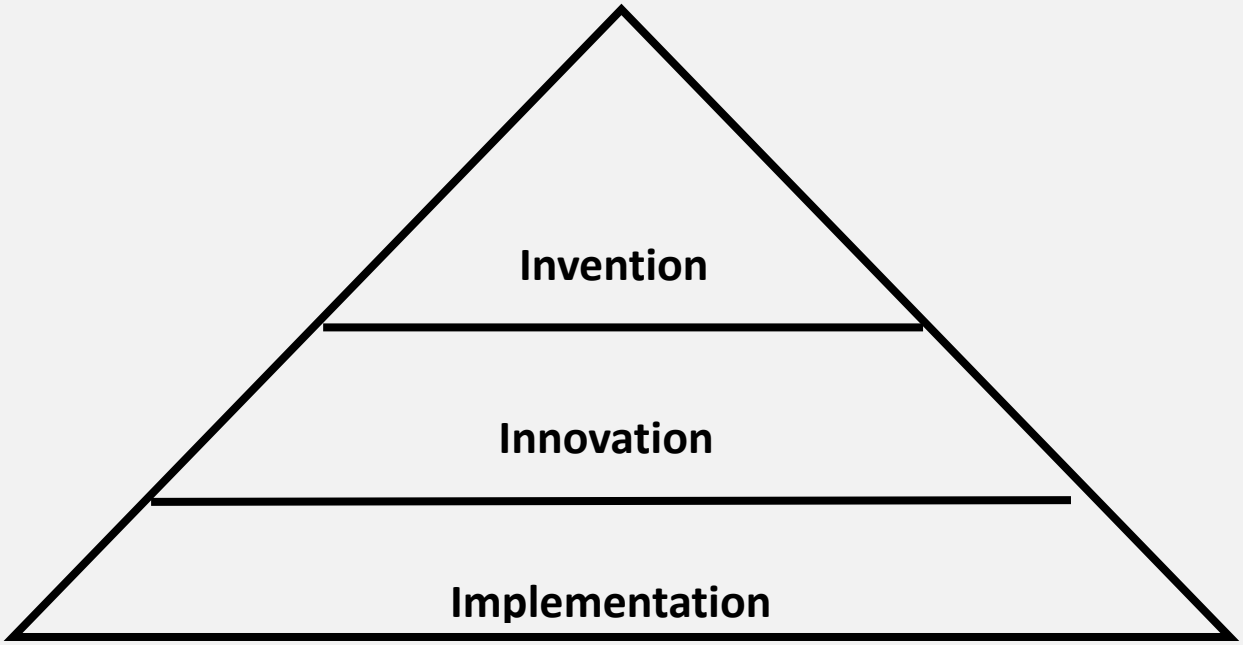
Several initiatives were undertaken in recent years (such as Virtual Labs, FOSSEE, Spoken tutorials, e-yantra, etc.) can be brought into our scale-out efforts, which will significantly add to the quality of education. While these are primarily intended for technical education, most of these can be easily extended to cover other domains.

Initiatives such as the National Digital Library (NDL) and SWAYAM PRABHA are important from the richness of content and delivery capabilities, respectively. The NDL should be further augmented with an OER repository. Video clips of all MOOC content can be scheduled for regular and repeated broadcast through SWAYAM PRABHA. Greater interactivity should be added to both these initiatives.

There is an urgent need to integrate SWAYAM with already existing popular platforms currently deployed in India like IIT BombayX, IIMBX, MOOCIT of IIT Kanpur. Considering the different commercial models of the platforms, a policy framework in this regard may need to be evolved. Also, a very useful tool (A-view) has been developed by Amrita University under the T10KT project available in open source. IITB is using it to connect to hundreds of the Remote Centres for all face-to-face interaction with participants of blended-MOOCs. Integration of such tools for interactivity with SWAYAM should be undertaken.

8.3.7. Overall Approach

Members of the group envisage that to achieve quality at scale, and to achieve sustainability in the effort; we must implement a 3-level pyramid structure shown in the diagram.



Pyramid to achieve quality at scale

Each of these three levels is elaborated in the following subsections:

a) Invention

Any thriving knowledge economy is primarily built on the new inventions created through very focused R&D efforts. In most developed countries, serious R&D efforts are primarily carried out in top universities as also in several large industries. Most Indian industries do not make large investments in R&D, and the main burden remains with our universities and Research Labs.

In the field of education, we have a large number of institutions providing B.Ed, M.Ed programs, but only a few have PhD level research activities. The field of Educational Technologies (ET) is studied mostly in technical Institutions. Only a few of these have strong R&D activities and associated academic programs. It is vital that a substantial investment is made to enhance and deepen these efforts. This group recommends the establishment of several centres of excellence for carrying out focused R&D in ET.

b) Innovation

In this part of the pyramid, meaningful results from past and on-going R&D efforts are used to build deployable technologies and platforms. In the context of Educational Technologies, these efforts are categorized into two components.

i) Strengthening of our deployment platform: These will include improvement in the main SWAYAM platform, as also its immediate integration with other operating platforms in India. Equally important is to continue the deployment, with further enhancement, of a large number of ongoing efforts under NMEICT.

ii) Collaboration with start-ups: The vital R&D efforts in ET must continue in our research labs and institutions. However, Indian Industry - especially several start-ups, has carried out several important innovations. These include not just technology innovations, but also innovations in business plans and approaches. It is important that both our R&D activities, as also innovation activities in the field of ET, use such efforts collaboratively. Such efforts can be undertaken in a suitable PPP model.

iii) Learners and educators will need appropriate, affordable devices for educational purposes, such as feature phones, tablets, laptops, etc. The landscape of such devices, emerging out of R&D in relevant institutions, or appearing in the market, should be regularly monitored. Content and applications suitable for use on such devices should be developed and released in open source. Some support for the development of such devices may be provided through relevant activities.

c) Implementation

It is this component of the pyramid, which will produce the desired end-result. To achieve quality at scale, this component needs to be carefully but speedily orchestrated. The approach envisages rolling out several quality MOOCs. These are to be offered in two modes. The first is the online mode to reach out to learners who have no other support system. The second is the blended-MOOC mode, where the teachers in all our HEIs are trained to adopt technology to improve the teaching-learning process in their classrooms substantially. Specific recommendations have been worked out by the group. These are detailed in subsequent sections.

8.3. MECHANISMS FOR ENHANCING IT BASED OUTREACH

As outlined in the previous section, online learning with an emphasis on blended-MOOCs has to be the main focus for achieving quality at scale. Our approach must provide for outreach to learners of all streams.

The enrollment numbers are revisited here to emphasize the diversity of streams. AISHE report provides enrolment numbers in various streams of higher education. Engineering and Technology stream has only 40 Lakh students in undergraduate programs. Arts, Science, and Commerce streams, on the other hand, have more than 1.83 Crore students studying for an undergraduate's degree. Open universities account for over 40 Lakh learners, a majority of whom are enrolled for Bachelor degree. Going forward, an increased GER is likely to see a larger number of our learners joining these streams. A lot has been done for adopting IT for education in professional streams. This can be seen by increasing numbers of quality MOOCs being offered, say, under NPTEL and IITBX/IIMBX offerings of SWAYAM. These efforts must be naturally continued and strengthened further. However, a far greater and more urgent need is to push for large scale IT intervention for students of Arts, Science, and Commerce.

There are two problems which need to be addressed in this context. Firstly, exposure and awareness of the effective use of IT for education are relatively poor among students and teachers in these streams. This can be addressed by a larger concentration of teacher training and student orientation. The second problem is that most institutions in these streams do not have a strong IT infrastructure, such as servers with requisite software, operational LAN, PCs, etc. Also, most do not have trained staff, such as system administrators, programs, web-developers, etc. to maintain and manage IT systems. This Problem can be addressed only by externally supporting such institutes initially, and encouraging them to establish such operational infrastructure of their own in later years.

Total numbers of HEIs have been reported as more than 40,000. These include universities, affiliated colleges, and standalone institutions. About 12.5 Lakh teachers mainly do the teaching. Open universities follow a different model. The learning material is distributed by post (now also available online in several cases). Several study centres have been established, with some regional centres acting as hubs. Learners regularly assemble at these study centres for learning assistance through face-to-face interaction, as also for examinations. It is interesting to note that this approach is similar in principle to blended MOOCs.

8.4. GOVERNANCE AND MONITORING MECHANISMS

Every scheme, and projects under a scheme must have governance and monitoring mechanisms to ensure proper execution with optimal gains and to permit course correction when required. While proposing such mechanisms, it is to be ensured that these mechanisms are seen more as facilitators rather than as controllers.

A two-level structure is proposed. The apex level should be the governance set-up for the entire EQUIP program. This body must be appropriately dovetailed with other similar bodies to ensure that of these works at cross-purposes. It is preferable to have a single body for the entire higher education.

For technology initiatives, the following structures are suggested at the next level.

a) The first is a policy level structure which will approve individual schemes and major projects along with requisite budgetary provisions, based on the priorities and fund availability. This is similar to a Project Approval Board (PAB). Ministry must ensure that approved funds are made available in successive years to the ongoing projects. This body should meet four times in a year, or more often if required.

b) The second structure is suggested for monitoring individual projects. It is recommended that this be set up as a strong Project Monitoring Unit (PMU). It is this body which should monitor the progress of each project activity and should have authority to recommend additions or subtractions to the list of activities (based on what is working well and what is not), as also to authorize modifications to budgetary allocations within the overall approvals. It should create recommendations to the PAB, for enhancement of a project where the outcomes appear to have a significant contribution to be scaled further, as also for new projects for which ideas may emerge from the ongoing activities.

8.5. ACTION AGENDA WITH TIMELINES AND BUDGET ESTIMATES

Using the approach outlined above, this section lists several items as an action agenda. Each of these action items has an annual timeline for deliverables, a corresponding budget provision. The overall approach envisages three durations. The first is the "immediate kick-off" phase termed as the foundation phase, which should be completed in the first year. Next is the expansion phase covering the second and third years. The last is the consolidation phase covering the fourth and fifth years.

8.6.1. Promoting Online Education to Get the Scale for Quality Education

a) Improving the Quality of SWAYAM Courses

- Stringent Quality control of content, pedagogy, delivery, and assessment - is considered as the most important element to be acted upon. Below par quality courses should never be allowed to be hosted in SWAYAM. This is essential to build credibility for the SWAYAM courses both nationally and internationally. Design of SWAYAM courses should adhere to the learner-centric MOOC (LCM) model accepted as the best way to ensure engagement of the learners.
- More focus on Formal courses which are aligned with the curriculum to be offered.
- Promoting Multi-disciplinary programs/courses through joint efforts of more than one Institute / University could attract more learners.
- Employability factor should be given focus - after doing Gap Analysis in coordination with Industry, to offer courses which will, in turn, improve the employability of learners. This will make SWAYAM portal very popular by attracting more learners.

- Specialized courses in niche areas and with more potential for employability should be prepared in collaboration with Industry. For this, if required, a special additional budget should be provided.
- More AR / VR and Animations in the courses to make them multi-sensory.
- Selection of Courses and Course Coordinators is the most critical element to ensure the quality of the course. So, only top-ranked Institutions and well-reputed Academicians from both public and private Institutions should be allowed. As of now, Private Institutions are not allowed to offer SWAYAM courses.

b) Certification & Recognition

i. Indian learners are keen to get the well-recognized certification at the end of the course, which would be of use for the furtherance of studies or jobs. For this, it is important to focus more on Certificate & Diploma certification - through an innovative bouquet of courses offered together, as per the needs of society and market.

ii. This can be done through effective Credit Transfer mechanism and allowing credit stacking. As of now, the credit transfer allowed up to 20 % to students, is not effectively happening, due to indifferent attitude/resistance from the Institutions. MHRD should come up with clear policy guidelines, in the very first year.

c) Strengthening and Expansion of Local Chapters

i. The local chapters are found to be critical in the dissemination and use of SWAYAM courses. However, their reach is very limited now with only limited funding support.

ii. All the Higher Educational Institutions should be supported through Local Chapters. Adequate funding from MHRD will help in strengthening the functioning of Local Chapters; Local Chapters can be used as the Centres to popularize the other digital initiatives of MHRD like Swayam Prabha, National Digital Library, e-Yantra, Virtual Labs, Spoken Tutorials, FOSSEE, etc.

iii. It is decided to support and strengthen at least 10,000 Local Chapters in the next five years.

iv. In the next five years, the Digital Education Support Centres (DESCs) would be located in 1,000 Higher Educational Institutions in the underserved regions, to be run on PPP mode. Each DESC would be provided with ten computers with high-speed internet.

v. They would act as the focal point for the adoption of all the digital initiatives in their respective Institution and also to support and hand-hold other neighbouring institutions and to the overall public.

vi. The well-performing DESCs should be recognized and awarded. Also, the top performing faculty and the students should be recognized and rewarded. They may be sent to the top premier Institutions like IITs / NITs / IISERs / Central Universities for Summer Workshop / Internship, funded by MHRD and certified at the end. Also, select well-performing faculty could be offered with Fellowships in top Institutions like IIT Bombay, IIT Madras for specialization in Education Technologies.

d) Capacity Building of Course Coordinators of SWAYAM Courses

i. The MHRD has just started an initiative to provide Capacity Building training for Course Coordinators (especially of Non- NPTEL) of SWAYAM courses. This includes continuous handholding by the Resource Persons for a period of min 90 days after the training.

ii. The top-performing Course Coordinators would be certified separately and can be offered Fellowships to pursue further studies in Education Technology sector in reputed Institutions like IIT Bombay and IIT Madras.
iii. Incentivizing the Teachers - MHRD should come up with a policy to incentivize the faculty involved in production and running of SWAYAM courses, by treating the time involved in digital education as part of the regular workload, rather than treating it as an extra workload.
iv. The faculty are already exposed to MOOCs courses- by undergoing refresher course through SWAYAM MOOCs courses under ARPIT (Annual Refresher Program in Teaching)

e) Promoting Local Language in SWAYAM Courses

i. Unavailability of courses in the local language (especially Hindi) is a major deterrent for most learners in rural India, to take up SWAYAM courses. MOOCs course on Physics in Hindi language, run by IIT Kanpur is said to be a huge success.
ii. Translation of existing SWAYAM courses has been taken up on a pilot basis, which turns out to be a time-consuming exercise.
iii. To cater to the local language needs of many students, production of MOOCs course in the local language, at least to a limited number of courses, should be promoted.

f) Internships and Hands-On Lab Courses at Premier Institutes

i. Students of colleges in tier-2 and tier-3 towns, who perform well in SWAYAM online courses, are to be hosted at premier institutes such as IITs, IISERs, IISc, NITs, and CUs during summer breaks for internships or organized lab courses.
ii. Budget: Rs. Six thousand per student per week, Cost of 1 lakh student-weeks over five years: Rs. 60 Crores
iii. Visible outcomes: Internship reports/papers, lab exams

g) Portal Upgrades and Interfaces

i. Improvement of SWAYAM course delivery portals to add new features.
ii. SWAYAM local chapter application: Each local chapter to mirror SWAYAM in their LAN through this application and host locally created content to augment/bridge SWAYAM courses for their students.
iii. Budget: Rs. 100 Crores over five years
iv. Visible outcomes: Usage of the portal and its features by faculty and students.
v. Swayam integration with other platforms is important so that MOOCs and Blended MOOCs offered in these are directly made available on SWAYAM. Two platforms which are being used by IITK and IIMB/IITB should be immediately integrated. This task requires the development of REST APIs on each of these, interface work with SWAYAM, final integration, and annual support activities

h) SWAYAM Outreach Content

i. SWAYAM has course content but does not have content on orientation/introduction to a subject and possible career after specializing in a subject/area.
ii. The proposal is to create documentary-style videos introducing a general audience to every subject and specialization area with a subject and provide career counselling.

i) Promoting SWAYAM Courses to Improve the Learning Outcomes

Various modes of accepting SWAYAM courses by Institutions is observed, which are as follows:

i. More than 100 Institutions have started accepting (through their Academic Council) to provide Credit Transfer to the students up to 20 %. The availability of courses that are aligned with the curriculum is still an issue. Also, Institutes are not proactive in allowing credit transfer
ii. Thousands of Institutions, primarily private and state universities, have been allowing credit transfer to students who undergo SWAYAM / NPTEL courses for non-core courses. (extra-curricular)
iii. Some Institutions like JNTU, Hyderabad, West Bengal Technology University, UP Technical University are allowing credit transfer to the students who undergo NPTEL courses)
iv. Many Institutions have been adopting Blended Learning method - by asking the students to register and study SWAYAM courses before coming to the class
v. In this context, it is very important to promote learning through SWAYAM courses in all possible ways. A policy guideline in this regard from MHRD would help streamline the process.

j) Hive Off SWAYAM Into A Separate Autonomous Board Driven Organization Under MHRD; To Facilitate More Focused Effort

Creating a responsive, innovative, and the financially viable platform is extremely important against the context of myriad competing learning platforms – both national and international – that are now emerging in the digital learning space. The current administrative structure of SWAYAM, in which regulatory bodies are also implementing agencies, is likely to hamper the development of an adaptive organization.

Online education is rapidly evolving. Technologies like Artificial Intelligence, Blockchains are likely to open up more opportunities. There are basic challenges like poor infrastructure, the sheer scale of students, languages, and geographies. Then there is the opportunity to develop SWAYAM into a major component of India's soft power in International influence.

Given this, we need to strengthen the Technology ownership of the SWAYAM platform substantially. There should be a strong in-house team doing technology management and visioning. The actual development can be outsourced — something like a CTO for SWAYAM, not just a CEO.

It is proposed that SWAYAM be spun off an independent entity (company or society) with administrative and financial autonomy, under the Ministry. The advantages could be many, including:

i. This autonomy will allow SWAYAM to take decisions that will allow it to compete effectively with the myriad new platforms that are emerging.
ii. It will allow SWAYAM to create and foster partnerships with other non-governmental organizations – including private universities and international organizations.
iii. It will also help explore alternative financial and business models to reduce the dependence of the organization on government funds.
iv. Allow the regulatory organizations that oversee India's Higher Education to function more effectively as referees and facilitators rather than players.
v. The above proposals are in line with the principles of good governance.

k) SWAYAM Should Graduate to a Virtual University

Both demand and supply side constraints challenge the efficacy of India's Higher Education system. Supply constraints relate to poor infrastructure, shortage of high-quality faculty, and

lack of finances. Demand side constraints are primarily due to a lack of connect between employability and degrees and other social factors.

Any solution proposed should be able to release both the demand and supply constraints and should meet the following conditions:

1. There should be no compromise on the quality of education
2. Solutions proposed should lead to increased access to the economically or socially disadvantaged sections of society.

Given this, the primary challenge is to use technology to scale up rapidly while simultaneously allowing students to earn their degrees flexibly. One possibility is to create a Virtual University around SWAYAM. Such an approach can help us overcome the infrastructural, financial, and workforce constraints while simultaneously linking higher education to employability.

8.6.2. Training Teachers in Use of Technology and Associated Pedagogy

a) Proposals related to SWAYAM cover the design and conduct of MOOCs, as also the subject-specific orientation programs to the faculty members in the form of FDPs. However, as mentioned earlier, teaching faculty in our HEIs are not well versed with the effective use of technology in education. Teachers from technical and professional Institutions are better informed in technology, but still, lack a proper understanding of its effective use. More importantly, all teachers, including those from technical institutions, do not at all, have any exposure to the associated pedagogy to be used for enhancing the teaching-learning process. While flipped classroom has been talked about, most have never practised this or similar derived mode in their actual engagement with students. Such FDP has been designed and delivered to some 8000 teachers in a blended mode. A rigorous online assessment is involved, and not all participants qualify (the qualifying rate observed was around 82%).

Through DESCs (Digital Education Support Centres), it is possible to ensure such basic training to ALL teachers of the higher education system. The methodology, such as T10KT could be used. The premier Institutions which are in a position to immediately start this activity could lead to this massive task of providing such mandatory orientation to teachers. It is to be noted that such target teachers number more than 12 Lakh as of now, and are likely to increase further over the next five years. It is only after such orientation, that our teachers can ensure better learning of their students, and can more meaningfully undertake their share of the actual IT-outreach targets.

b) The DESCs proposed to be established as outlined in section 5.1 (3) above are expected to contribute toward the outreach effort significantly. However, most non- technical institutes have no expertise or experience in handling technology. It is proposed that a set of 500 DESCs be chosen among technical institutes, based on their proven competence and experience in conducting and participating in previous and ongoing activities. Such DESCs hubs are given the grant to set up necessary infrastructure facilities including facilities for interaction, with a dual mandate in training the teachers. Firstly, they must make available these facilities, including associated labs for all the MHRD activity requiring participants to interact either in a virtual classroom environment, or to participate in local tutorials and experiments in their computer lab. This is something that many institutes so engaged have been doing, albeit for a specific predefined activity only.

It is also proposed that 500 additional DESC hubs be created in chosen non-professional Institutions, such as those offering Arts, Science and Commerce courses. Each such institute should be located in the same town or vicinity of a hub DESC in a technical

institute. The second mandate which each technical hub institution must agree to, support the non-technical institute in its town/vicinity, as another DESC hub. Such support should include assistance in establishing the servers and software, technical training staff such as system administrators, and handholding the non-technical hub institute so that it, in turn, starts providing the services to other non-technical HEIs in the region.

c) The teaching of technology can be also be further scaled up using the blended training mode made up of T10KT and Spoken Tutorials. Through this method, it is possible to provide the first level IT training tens of thousands of college teachers at a time. Such single day programs can act as either the initial basic introduction module or as a refresher module. It is also possible to provide this training to school teachers, which will result in the early adoption of digital technologies. Everyone who undergoes this training can conduct these programs for more teachers. It is thus possible to reach the saturation levels for an early short introduction quickly. No separate budget may be required as these programs can be covered under the two provisions for 5.2 (1) above and 5.5 listed later in the section.

d) Training of skills needs to become an integral part of our higher education system. Such important skills can be imparted. Skills' training is useful by itself in many cases. A specific case in point is the skill training in the area of animation, especially educational animation. One such effort in imparting a blended MOOC on animation has resulted in several participants getting livelihood using the skills so leaned. This effort also provided very important takeaways on learner-centricity. Good command of these skills may be useful if one wants to learn the accompanying theory also and go to the next level. While skills training can be imparted through self-learning (say, through Spoken Tutorials), theoretical knowledge can be imparted through SWAYAM MOOCs, combined with contact programs (say, through T10KT+A-VIEW). It is recommended that at least a few important skill courses be included among those being offered as blended MOOCs.

Promoting Education Technologies for Improving the Quality of Education

a) Research in Edu Tech should be promoted significantly by special funding by MHRD. Several Centres of Excellence (CoE) should be set up in technical institutes having established academic programs and research activities in ET. These CoEs should be mandated to ensure that the R&D work done pertains not just to technical education, but specifically includes all domains of higher education. It is recommended that at least three such CoEs be established with provision for annual sustenance of research and innovation. The HEIs would be selected on a Challenge Mode.
b) In the CoEs, incubation centres would be set up for hosting new start-ups in Ed-Tech.
c) Interested faculty should be offered Fellowships to pursue further studies in Edu Tech area
d) More Ph.Ds. should be offered and supported by MHRD in Edu Tech area
e) Innovative work in the Edu Tech area is done mostly by start-ups. A policy should be worked out for tying up with start-ups so that it can be effectively integrated with the Digital Initiatives. MHRD would support 100 best tech start-ups through equity funding at the rate of Rs. 5 cr per start-up.

8.6.4. Promoting Virtual Labs

a) Linking of Virtual Labs with other initiatives like SWAYAM MOOCs is very critical for the effective utilization of Virtual Labs.

b) Expansion of new labs, in coordination with SWAYAM courses, or even as stand-alone experimental facilities, should be taken up. The scope must be expanded at least to cover subjects from the field of Science as taught in Science colleges. Possibilities should be explored to see if simple experiments in other domains are feasible to design and use.
c) Expansion to untouched new areas/regions of the country should be done through DESCs.

8.6.5. Promoting Spoken Tutorials & FOSSEE

a) Expansion to untouched new areas/regions of the country should be done through DESCs.
b) Possibility of a tie-up with private agencies to popularize and handhold in the majority of the higher educational institutes can be tried.
c) Creating Spoken Tutorials, conducting workshops are some important activities to be undertaken. Selecting Fellows, Forming Pyramids, and sustaining them, Handholding partner institutions, raising partner institutions to an equal status, should be the outcomes of these efforts
d) Flow-sheeting, Circuit simulation, CFD case study, Steel structure design, preparing textbook Companions, are some of the important activities to be undertaken by FOSSEE initiative.

8.6.6. Promoting e-yantra

a) Expansion to untouched new areas/regions of the country should be done through DESCs.
b) Possibility of a tie-up with private agencies to popularize and handhold in the majority of the higher educational institutes can be tried.

8.6.7. Promoting SWAYAM PRABHA and National Digital Library (NDL)

SWAYAM PRABHA

a) The dissemination of the information on Swayam Prabha faculty, including the impact in improving the learning outcomes, should be done widely
b) Interactivity element should be introduced. Using A-View software, the students who are viewing these channels could interact live with the faculty member. Also, the phone could be used for interaction. Through such live interactions, the students can clear doubts through discussions.
c) Introducing a Channel on Life Skills for the learners (students) covering subjects like Personality Development, Spoken English, and also on Solving Question Papers should be undertaken.
d) Regulatory / Incentive measures to motivate Institutions to promote the use of Swayam Prabha contents effectively need to be worked out.
e) Expansion to untouched new areas/regions of the country should be done through DESCs.

National Digital Library (NDL)

a) Linkage of NDL with SWAYAM for effective utilization of available contents should be done immediately
b) NDL Clubs to popularize the NDL is being planned. This may also be done as part of Digital Education Local Chapters, to bring in a synergistic effect.
c) NDL should make the search facility more user-friendly. Also, the ability to profile the users and push contents accordingly would make NDL effective and popular.

d) One or more OER repositories for all domains, higher education should be set up as an adjunct to the NDL initiative. These repositories should have searchable education content including content from SWAYAM courses

e) Expansion to untouched new areas/regions of the country should be done through DESCs.

8.6.8. Promoting Digital Initiatives in the Unreached Areas

a) Special efforts to promote digital education in the so far unreached areas should be taken up as a targeted Outreach Initiative through DESCs.

b) At least 5 States which are backward in digital education should be targeted every year for special promotional activities.

c) Capacity building of the faculty with hands-on training and a clear scheme of adoption of digital initiatives with fixed timelines should be followed.

d) The emphasis of this initiative should be more on assured adoption of the digital initiatives, by close handholding and mentoring, rather than just dissemination of information.

8.6.9. PPP for Implementing Digital Initiatives

a) The leading Higher Education Institutions create excellent Digital Initiatives which are applauded both Nationally and Internationally

b) The bandwidth of the HEIs is limited for taking these Digital Initiatives to the length and breadth of the country and to support their operations on a 24x7 basis

c) The support of the Private industry in the PPP mode could be taken up for operationalizing and running the Digital Initiatives across the country. This was recommended by NASSCOM after the third-party evaluation of NMEICT projects in 2017.

d) Also, the support of the Private industry could be taken for the introduction of Edu Tech in these initiatives, especially SWAYAM, which would add much value to the initiative itself.

8.6.10. Other Promotional Interventions

A) Operation Digital Board

The spread of educational technology and connectivity allows providing equity in educational standards across the country. The Digital initiatives such as, SWAYAM and SWAYAM-Prabha DTH Channels by MHRD provide adequate content of high quality which can be taken to every classroom, and thereby facilitating blended learning and flipped classrooms. These pedagogical interventions can adequately raise the standards of teaching, irrespective of the location of the Institute. Such technology enabled learning can also inspire teachers across the country to raise their standards of teaching. One of the major Technological enablers for this is to convert the classrooms into Digital & interactive classroom by incorporating Digital Board technologies.

Broadly component of ODB would include Communication/Connectivity, Display System, Power Source; e-Content(s) and Content Distribution Network, Network Management System & Access Control.

B) Ranking Parameters

The adoption of digital initiatives by the Institutions should be given weightage in the NAAC / NIRF / AARIA rankings of MHRD.

C) Internships

The faculty and students who excel in the adoption of digital initiatives should be identified and rewarded. They may be offered fellowship for further training or summer internship in the reputed Institutions like IITs / NITs / IISERs / Central Universities.

Another way to select Fellows is by making students complete certain tasks, to be eligible to be shortlisted. Those who demonstrate their capability in completing these tasks and

motivated enough to complete the prerequisite tasks sometimes perform better than students shortlisted through exams.

The well performing Higher Educational Institutes should be motivated to provide Mentorship role by providing Summer Internship to school students from nearby schools in the areas linked to digital education. This is expected to sensitize and expose the school students to digital education, which will help in easy adoption in college.

8.6. Financial Requirements

Item	Detail	Physical	Financial (Rs Cr)
Creating SWAYAM corporation	Setting up under Societies Act		25
Creating Top Class SWAYAM Courses	Create 8,500 new courses in SWAYAM, at least 25% of them in regional languages @ Rs. 20 Lakh Per Course	2000 courses	1700
Ensuring Quality in creation, pedagogy, delivery, and assessment	Ensuring quality in 8,500 SWAYAM courses @ Rs. 1 Lakh Per Course	2000 courses	85
Strengthen local chapters for all digital initiatives	10,000 colleges @ Rs. 2 lakh per year		700
Digital Education Support Centres (DESC) in 1000 colleges in underserved regions run on PPP mode	Ten computers with high-speed internet	10000 courses	100
Capacity Building programs for SWAYAM Course Coordinators	500 programs @ Rs.10 lakhs per program	100 courses	50
SWAYAM portal management & cloud charges	At the rate of @ Rs.30 Cr per year		150
Establishing CoEs in the use of virtual reality, augmented reality and artificial intelligence for using them in SWAYAM courses for making available adaptive learning	Three institutions will be selected on the challenge method - use private efforts	-	75
In the CoEs, set up incubation centre for hosting new startups in Ed-Tech	3 incubation centres @ Rs.50 Cr each		150
Promoting Ed tech, through Startups/support towards fellowships / PhDs.	100 best tech startups to be assisted through equity funding @ an average of Rs. 5 Cr per EdTech startup	-	500
Virtual Labs	To develop more virtual labs in relevant areas	-	25

Spoken tutorial and FOSSEE	Promote the use of open source software	-	100
e-Yantra	Establish robotic labs in more HEIs	-	75
SWAYAM Prabha- Transponder + Up-linking + Channel operations	Operational charges	-	160
SWAYAM Prabha – contents including on life skills and interactive	Produce 32,000 hours of content	-	160
NDL	Add more digital resources and strengthen infrastructure	-	150
NDL (OER)	Create an OER repository in NDL which would be a valuable resource for learners and SWAYAM course developers	-	70
Outreach for unserved areas	Bihar/Jharkhand/Odisha/NE/ CH		25
Internships for bright students from high schools and technical institutions	2000 internships per year @ Rs. 10000 per student	-	10
Operation Digital Board in all HEIs	Interactive Digital Board, local server, LAN, 2 lakh rooms @ Rs.1 lakh per classroom		2000
Grand Total			**6310**

8.1. SUMMARY OF RECOMMENDATIONS

1. The focus of the group is to achieve quality at scale. The approach is to use all national technology initiatives undertaken in the last decade, such as SWAYAM and various NMEICT projects. The proposals made here build on these efforts, and chart a roadmap to be followed for 5years.

2. Blended MOOCs using flipped mode pedagogy is considered to be the most effective mechanism to promote quality at scale. Teachers of all existing HEIs are to be given mandatory training in the associated pedagogy. Lerner-Centric MOOCs are to be designed and offered under SWAYAM.

3. A large chunk of learners enrol for conventional degrees in Arts, Science, and commerce. High-quality MOOCs are to be specially developed for such students. Electives imparting skills which are relevant in this century must be incorporated in the curriculum of such degrees. These should be offered as blended-MOOCs under SWAYAM.

4. SWAYAM Corporation would be created by hiving off all the activities of SWAYAM to provide functional autonomy. This is expected to improve the quality of courses and help learners significantly.

5. Capacity Building program for the course coordinators of SWAYAM would be

organized to reorient the faculty for offering online courses.

6. It is proposed to strengthen Local chapters in 10,000 HEIs and set up Digital Education Support Centres (DESC) in 1000 colleges in underserved regions.

7. Centres of Excellence for promoting the use of Ed-Tech in Education would be set up in three Higher Educational Institutions on a challenge mode. Also, Incubation centres would be set up in these CoEs for hosting new startups.

8. One hundred best tech startups would be assisted through equity funding.

9. The other ongoing initiatives in National Mission on Education through ICT (NMEICT) like National Digital Library, e-Yantra, Virtual Labs, FOSSE, Spoken Tutorials, Swayam Prabha would be strengthened.

10. Operation Digital Board initiative would be launched to provide interactive digital education in all Higher Educational Institutions in a phased manner. The digital pedagogy to promote Blended mode of learning would be promoted.

11. A pyramid needs to be created with Invention at the top, based on R&D in Edu-tech. Next is the innovation layer, building tech-based solutions such as platforms and tools. Implementation is the largest layer at the bottom of the pyramid to achieve outreach at scale. Recommendations adequately cover activities in all three layers.

12. It is important that all stakeholders are aligned and develop a sense of ownership in these efforts. Students, teachers, HEIs (Principals, directors, VCs), other agencies (UGC, AICTE, NAAC, NBA, NTA, etc.), must be continuously engaged. The success of these initiatives particularly depends upon appropriate recognition of, and active support to, these efforts by accreditation and regulatory agencies. Such needs have been identified.

13. The higher education system should eventually become self-sustaining through a thriving eco-system. Funding support proposed here is primarily to kick-start the process. A specific structure for governance and administration is included, with clearly defined outcomes to be monitored.

14. The deliverables envisaged include reaching out to more than 7 Crores learners, training of 15 Lakh teachers in adopting technology and pedagogy, training teachers in the creation of high-quality MOOCs, creation of technology infrastructure, and recognition of Digital Education Support Centres (DESC) and strengthening of Local Chapters in 1000 HEIs.

CHAPTER 9
EQUIP Group 9: Internationalisation of Higher Education

INTRODUCTION

Internationalization of higher education has become an inevitable dimension of higher education in the era of globalization, and in the context of the generation of new knowledge and its application. The internationalization of higher education is driven by a combination of political, economic, and socio-cultural factors in addition to a strong academic rationale.

India has had an important place in the internationalization of higher education. The University of Nalanda, or the Nalanda Mahavira as it was known at the time, established in 4th century BCE, was one of the world's first great universities. In its heyday, in the 7th century AD, Nalanda University had some 10,000 students and 2,000 teachers. The subjects taught at Nalanda University covered diverse fields of learning covering science, astronomy, medicine, and logic as diligently as they applied themselves to metaphysics, philosophy, Samkhya, Yoga-Shastra, the Veda, and the scriptures of Buddhism and foreign philosophy. Transcending ethnic and national boundaries, Nalanda University attracted pupils and scholars from China, Indonesia, Korea, Japan, Persia, Turkey, and other parts of the world.

An internationalized education is considered necessary for graduating students to navigate an increasingly interconnected world. In the field of higher education, internationalization is defined as "the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education" (Knight, 2004). Internationalization of higher education is also defined as "the intentional process of integrating an international, intercultural, or global dimension into the purpose, functions and delivery of post-secondary education, in order to enhance the quality of education and research for all students and staff and to make a meaningful contribution to society" (De Wit and Jones, 2015). This definition reflects the increased awareness that internationalization of higher education, which has formerly been largely elitist, must become more inclusive. It also emphasizes that internationalization must not be a goal in itself, but a means to enhance the quality of education and research.

9.2 SITUATION OVERVIEW: ISSUES AND CONCERNS

9.2.1. Limited number of international students in India: One of the features of Internationalization of higher education relates to inward mobility of students from other countries. Currently, Indian students are increasingly travelling abroad for their studies. There are about 3,06,000 Indian students studying abroad (UIS, 2018). India ranks third position in the world. However, only approximately 46,000 international students, accounting for less than 1% of global international student mobility, a study in Indian higher education institutions given that globally, nearly 50 lakh students are reported to be studying outside their home countries. India is in the 26th position amongst the top destinations for International student mobility globally. The target of at least 15% Supernumerary seats for international students in Indian HEIs, i.e., 15% of total enrolment in HEIs, set earlier is very distant.

9.2.2. Limited initiatives for attracting international students: India is yet to harness the full potential of its wide education network to attract international students. The initiatives in India to promote the internationalization of higher education have been very limited. So far, the only significant efforts from the government to attract international

students to Indian institutions have been the ICCR scholarships (around 4,000 scholarships given per year) and ITEC fund support from the Ministry of External Affairs (MEA), Government of India. To increase the number of inbound students and to brand India as an educational destination, the 'Study in India' program was launched in April 2018. However, the number of students enrolled in HEIs in India continues to be low. During the year 2018 (the initial year of the 'Study in India' program), only around 6,000 students from over 30 countries were admitted into different programs of study offered by reputed higher education institutions (HEIs) across India. Under the 'Study in India (SII)' program, a centralized admission portal and a helpline have been put in place. Around 100 participating institutions (selected as per NIRF ranking and NAAC scores) also offer fee waivers to the meritorious students. Thirty plus countries have been identified under SII program for branding activities. To give impetus for the inbound flow of international students, it has been decided to offer, from the current year, 2500 scholarships under the 'Study in India' program. In addition to this, the construction of 20 state-of-the-art international hostels has been approved under the 'Study in India' program, to be built in various higher education institutions in India.

9.2.3. Limited initiatives for promoting Indian HEIs abroad: While the Study in India (SII) is a good program to attract international students to India, there are two counts where we need to bolster our positioning of Indian HEIs. They are (i) marketing our universities and other HEIs, both public and private, abroad – primarily with a view of attracting the right students and faculty to India, and (ii) establishing the presence of Indian HEIs of repute in foreign countries. The latter is essential again from two counts – (i) it is time we start influencing and attracting talent from across the world. Our impact would be felt more when we have off-campus centres of Indian HEIs abroad and have programmatic collaborations with reputed HEIs in chosen countries – rather than just attracting students back home, and (ii) it is also a commercially sound proposition – bringing in the much-needed additional revenue stream for our universities and other HEIs.

9.2.4. Limited efforts aimed at disseminating Indian best practices in education and research to the global varsities and learning communities: As much as we adopt global practices in terms of curriculum content, pedagogy, learning assessment, accreditation, ranking, placement, equivalence, etc. we should also be actively contributing to the internationalization agenda. This can happen only when there are a structured intervention and regulatory push. China, for example, is actively doing this – thereby giving its Universities an edge.

9.3. OVERALL PROGRAM GOAL/TARGET

Target - Between 2019 & 2024

- Enrolment of international students in Indian HEIs is increased by more than ten times;
- The number of Indian HEIs with off-campus centres abroad is increased significantly;
- The number of Indian HEIs offering cross border delivery of programs (through ODL/online programs) to enhance access to higher education is increased by ten times;
- International strategic partnerships and alliances for international mobility of faculty and research collaboration is increased by ten times; and
- Curricula of programs/courses of study are renewed to support 'Internationalisation of curricula and learning outcomes.'

9.4. STRATEGIES

The strategies for promoting the internationalisation of higher education would primarily be fourfold, namely, enhancing i) Student Mobility; ii) Faculty Mobility; iii) Institutional Mobility, and iv) Program Mobility. The strategic approaches will involve: facilitating international mobility of students, both inward and outward; international mobility of faculty, both inward and outward, by establishing strategic partnerships and alliances with reputed HEIs in other countries for faculty mobility, knowledge sharing and research collaboration; encouraging institutional mobility through the establishment abroad of off-campus centres of Indian HEIs; and enhancing program mobility i.e. cross border delivery of higher education programs by Indian HEIs through ODL/online courses. Internationalization of curriculum and learning outcomes through the renewal of curricula of programs/courses of study offered by Indian HEIs to create a nationally and internationally competitive education and provide internationally relevant education to inbound students will also constitute an important strategy for attracting international students to India.

9.5. KEY INITIATIVES (ACTION PLAN)

9.5.1. Enhancing inward mobility of international students

> **Target:** The inward mobility of international students, particularly from the Global South, is substantially enhanced to reach an enrolment of 500,000 international students in Indian Higher Education Institutions (HEIs) by 2024.

A major thrust of initiatives for internationalization of higher education in India will be to substantially increase the inward mobility of international students, particularly from the Global South. Specific initiatives for enhancing inward student mobility will include:

a) **Granting autonomy to HEIs participating in the 'Study in India (SII)' program on matters relating to internationalization of higher education (October 2019 to March 2020):** All HEIs participating in the 'Study in India (SII)' program will be granted autonomy, giving freedom to them to undertake all activities relating to internationalization, including the recruitment/admission of international students, recruitment of foreign faculty, and forging academic collaboration with foreign HEIs for facilitating faculty mobility as well as for promoting joint research studies. Each of these HEIs will be supported to develop an operational strategy and a plan for increasing enrolment of international students during the next five years to achieve the target of at least 15% supernumerary seats for international students in each of these HEIs in a phased manner. The plan will seek to position select HEIs as an attractive education hub for students from Asian, Middle-East, and African countries. The SII program will be strengthened/expanded to cover more HEIs from different parts of India. The main thrust of the SII program will be to enhance the cumulative number of international students to 2,00,000 in the academic year 2020-21; to 3,00,000 in 2021-22; to 4,00,000 in 2022-23; and to 5,00,000 international students in 2023-24.

b) **Scholarships for international students (2020 - 21 to 2023 - 2024):** As a part of the effort to achieve the target of enrolling 5,00,000 international students in HEIs by the academic year 2023-24, scholarships will be provided to at least 10% of the inbound students enrolled

in Indian HEIs. By the end of 2023-24, at least 50,000 scholarships (10% of the expected enrolment of 500,000 by the academic year 2023-24) will be funded by the Government of India, to give a fillip to the efforts aimed at attracting international students to undertake studies in HEIs in India. During the year 2020-21, a total of 20,000 scholarships will be made available for international students enrolled in HEIs participating in the SII program (i.e., 10% of the expected 2,00,000 students in 2020-21). The cumulative number of scholarships will be increased to 30,000 in 2021-22, to 40,000 in 2022-23, and to 50,000 in 2023-24. These scholarships will be branded and operated in a manner so that it is perceived as "aspirational" by international students who want to study in Indian HEIs. All the institutions participating in the SII program will be eligible to receive this support. Also, the top 10 % of meritorious students (amongst the students receiving a scholarship) will be supported with full financial support for taking care of all education-related expenditure, including out of pocket expenses and to and fro air travel. Information relating to the availability of scholarships will be disseminated in all countries, especially those included under the 'Study in India' program. Extensive branding campaign will be made to enhance responses against these scholarships being offered under the SII program.

c) **Internationalization of entrance examinations/tests for the selection/recruitment of international students (October 2019 to March 2020):** A global and transparent entrance examination/tests will be designed and used for the selection of international students and to identify meritorious students for the award of scholarships. Service Providers (HEIs) will be involved in setting standards and designing and conducting online tests in different countries.

d) **Improving hostel facilities in HEIs participating in SII program (2020-21 to 2023-24):** All the HEIs participating in the SII program will be eligible for receiving financial support to construct hostel facilities of international standard to ensure effective living conditions and learning environment for international students enrolled in these institutions. As a part of the SII program, MHRD will provide Viability Gap Funding (up to 10 crores per hostel out of the total cost of Rs 20 cores per international hostel) to 200 HEIs during the period 2020-21 to 2023-24.

e) **Putting in place an enabling framework for internationalization of higher education: (October 2019 to March 2020):** A series of measures will be initiated to facilitate inbound mobility of international students: Some of these measures will include the following:

i. **Easing VISA norms and addressing FRRO issues:** The VISA norms for inbound students will be eased for attracting international students and enhancing their enrolment in Indian HEIs. The validity period of Students VISA will be for the entire study period, including the possible Work Permit period. MHRD will coordinate with the Ministry of Home Affairs (MHA), Government of India to bring out the necessary government regulations about the VISA norms. Foreigner Regional Registration Office (FRRO) issues will also be taken up with MHA as well as facilitation of FRRO registration on campus or online, at least for institutions participating in the SII program. An appropriate mechanism will be put in place to address genuine concerns and difficulties faced by international students/faculty about visa, registration, an extension of stay, and tax rules and regulations.

ii. **Relaxing the ceiling of 15% supernumerary seats per HEI:** Currently, there is a provision of 15% supernumerary seats in each institution to admit international students. As some institutions have sought permission to raise this limit to enrol more international students, the upper cap of supernumerary seats will be done away with for the top-ranked Institutions. MHRD will issue orders in this regard to facilitate admission of international

students beyond 15% of ceiling. In the case of the top ranking HEIs participating in SII program, the ceiling will be raised to 30 % of the supernumerary seats, as has been done with Institutions of Eminence (IoE).

iii. **Changing the VISA regime for allowing paid internship for international students:** Currently, the VISA regime does not allow paid internship for international students. This has been one of the disincentives for international students. This restriction will be removed in coordination with MHA and paid internship during the last year of Bachelors, and Masters Degree programs will be allowed, extendable by one more year based on the recommendation of internship provider and HEI.

iv. **Issuing Work Permit for international students:** At present, the Indian VISA regime does not allow any Work Permit for international students. This issue will be relooked to allow limited Work Permit in selected areas/segments where there is an imbalance in demand and supply and shortage of trained or highly skilled human resources in India.

v. **Offering specific language and bridge courses (2020-21 to 2023-24):** The international students enrolled in HEIs in India will be given opportunities to undergo specific courses in English language, including bridge courses, to help them overcome language deficiency and/or difficulties due to the lack of prerequisites for pursuing the chosen programs/courses of study. Specific courses in the English language will be offered as part of the 'Study in India' program to attract international students coming from a non-English speaking background.

vi. **Student exchange (semester-long) programs (2020-21 to 2023-24):** Student exchanges will be promoted through Government to Government (G2G) agreements and/or Institution to Institution tie-ups. MHRD will issue an advisory to Institutions to pursue such tie-ups. Student exchange programs will be a part of the MoUs being signed with foreign governments in cooperation in the field of education. G2G agreement for student exchange with 10 of the biggest global stakeholders such as Study Abroad (US), DAAD, EU (Erasmus scholarships), British Council, etc. will be executed to achieve a bulk student exchange figure of say 5,000 international students. The institutions participating in the SII program will be given preference.

vii. **Funding Indian Missions abroad for initiatives for Internationalisation of higher education (October 2019 to March 2024):** India does not have dedicated staff at Indian Missions abroad to work for Internationalisation, unlike countries like USA (USEFI), UK (British Council), Australia (Education Counsellor). MHRD will fund Indian Missions abroad for specific support from them regarding the internationalization of higher education, which includes supporting SII branding, communication, assisting all higher education institutions participating in SII in attracting international students, etc.

viii. **Facilitating mutual recognition of higher education qualifications (2019-20 to 2020-21)**: Immediate efforts will be made to get the MoU on mutual recognition signed with countries participating in the Study in India program. (The draft MoU in this regard has already been circulated to all the thirty plus targeted countries). This would help significantly in attracting international students from the participating countries to study in HEIs in India. As of now, India has a mutual recognition agreement only with a few countries like Morocco, Malaysia, France, and Afghanistan. Immediate action will be initiated to get the MoU on mutual recognition signed with targeted countries (under Study in India program).

ix. **Reducing the charge levied for equivalence certificate (October 2019 to 2023-24):** Currently, the Association of Indian Universities (AIU) issues Equivalence Certificate in recognition of foreign degrees equivalent to Indian degrees, on a case to case basis (in the absence of Mutual recognition agreements). The charge is levied for issuing the Equivalence Certificate is considered very high. MHRD will coordinate and refund AIU at least 50% of the charge being levied for issuing Equivalence Certificate to reduce the financial burden for international students coming under 'Study in India' program with timelines for rendering this service being predefined. It would also be ensured that both AIU and SII websites transparently and exhaustively display all the equivalence particulars. MHRD will issue orders in this regard during 2019.

x. **The Admission Cycle for international students (October 2019 to 2023-24):** The admission process of international students will be completed at least 4 - 6 months in advance (by December) for the academic session commencing in July every year. This will help international students to firm up their chosen destination. Similarly, the introduction of an additional window of admission in another semester for an overseas student would be explored given mismatch of timing in the publication of their results.

xi. **Designing/introducing short-term niche/immersion/ cultural and India-related studies (2020-21 to 2023-24):** Special, credit-based or another short-term niche/ immersion / cultural and India-related courses under 'Study in India' will be offered to meet the considerable demand of international students and attract non-degree students from developed countries. Institutions/Universities will also be encouraged to develop and offer specially designed courses on Indian Art, Buddhism, Music, Classical Dance, Indian Languages, Heritage, Yoga, Ayurveda, History, Politics, Development, etc. as these are areas where India has something unique to offer to international students. This will also go a long way in spreading India's soft power across the globe. Introducing good quality courses in Indic studies will benefit both Indian and international students.

xii. **Awarding Joint Degrees (October 2019 to 2020-21):** At present, the UGC Act, 1956 does not allow the award of Joint Degrees (allowing the issue of a degree jointly by more than one Institution/ university within India or jointly by a university within India and another university abroad), as it prescribes the award of a degree by a University. It should be interpreted that a degree cannot be awarded by an entity other than a University / Institute, rather than giving undue focus on 'a.'
There is a need to examine various provisions in the UGC Act, 1956 that may be interpreted to inhibit the award of joint degrees between two Indian institutions and an Indian institution and a foreign institution, and if necessary, the Act needs to be amended to allow the award of such joint degrees.

xiii. **Extending the duration of the Study in India program (2020-21 to 2023-24):** Given the long-haul nature of the strategy, the 'Study in India' program should be committed for at least seven years involving sustained country level branding and social media campaign. Country-wise strategy for the branding of India as an educational destination should be carried out by EdCIL. The portal would be developed to have enhanced features. The brand value and position of the institutions will be publicized internationally, through Indian embassies, so that students, faculty members, and foreign universities could approach them directly for working with them.

xiv. **Launching of a 'Young Scholar Return' initiative (2020-21 to 2023-24):** Indian students, who want to pursue a PhD at top-200 ranked universities in the world, will be supported

with scholarships (for up to 5 years), with the condition that the scholar will have to return to India after completion of their PhD for at least five years and then apply for the proposed 'PM Young Academician' scheme to be launched in 2020-21.

xv. **Promoting twinning programs (2020-21 to 2023-24):** To promote twinning and Joint Degrees / Joint PhDs, MHRD will incentivize selected Indian HEIs with funding. Indian HEIs will be encouraged to offer Twinning Programs whereby students enrolled with a higher education institution in India may complete their program of study partly in India, and partly in a partner institution in another country, complying with relevant national regulations. Similarly, students enrolled with a higher education institution abroad may complete their program of study partly in that country, and partly in a higher education institution in India, complying with relevant national regulations. In such cases, the qualification will be recognized by both countries. The curricula for academic programs relating to the priority areas identified by the Institutions could be designed in such a way that a student could complete three-four semesters in a University in one country and pursue studies in the remaining semesters in an HEI in India, and thereafter receive Certificate/Diploma/Degree from both the universities on successful completion of the program.

xvi. **Reinvigorating Network Universities (October 2019 to March 2024):** The participation of Indian Institutions in BRICS Network University, SCO Network Universities and ASEAN-India Network of Universities, remains very minimal. Lack of earmarked funds with the Institution for activities relating to the network university is considered as the prime reason for this situation. MHRD will support such Network of Universities through special funding to the participating institutions. Also, India should be pro-active in taking a lead role in such Initiatives in the future. Indian HEIs which are a part of the Network Universities (such as BRICS Network University, SCO Network Universities and ASEAN-India Network of Universities), will be encouraged to offer Twinning Programs. The curricula for such programs could be designed jointly by the Indian HEI and the partner institutions abroad.

9.5.2. Promoting Faculty Mobility

Target: The crossborder mobility of reputed faculty is promoted through existing and proposed initiatives, with special focus on attracting foreign talent for longer-term assignments and also enabling Indian faculty to teach and undertake joint research projects in globally reputed institutions.

Faculty mobility involves global mobility of faculty from HEIs in India to HEIs abroad and mobility to India of faculty from reputed HEIs across the world. Faculty members at HEIs in India, especially those at HEIs participating in the 'Study in India' program, will be encouraged to get opportunities to teach and undertake research in foreign HEIs. This could include exchange programs with designated universities, deputation/lien, short-term assignments/jobs, and short-term training programs in India and abroad. Faculty at Indian higher education institutions will be eligible for sabbatical leave which they can use for availing of such opportunities. Similarly, the mobility of faculty from reputed foreign universities will also be facilitated. In addition to the existing short-term faculty mobility under schemes like GIAN, SPARC, VAJRA, long-term mobility of reputed foreign faculty to India will be promoted.

Specific initiatives to facilitate global mobility of faculty from Indian HEIs will include the following:

a) **Establishing partnerships for global mobility of faculty at Indian HEIs (October 2019 to 2023-24):** International strategic partnerships for global mobility of faculty from Indian HEIs will be promoted. Approaches to promoting partnerships and alliances for faculty mobility will include facilitating deputation/lien to enable faculty from Indian universities to take up teaching/research assignments/jobs in universities abroad; deputation of faculty to undergo short-term training programs in Universities abroad; Tie-ups with educational institutions abroad for faculty exchange for teaching/research as well as for faculty development; providing short-term fellowships for deserving Indian faculty to undergo specialized training abroad.

b) **Expanding academic collaboration with HEIs abroad (October 2019 to 2023-24):** Tie-ups with reputed foreign higher education institutions will be expanded for knowledge sharing and research collaboration. Strategic partnerships will be forged for exposing Indian faculty in HEIs to global research programs so that they can suitably orient their students to the new global research problems that can be tackled locally in the global context. The coverage of the ongoing 'Scheme for Promotion of Academic Research and Collaboration (SPARC)' will be expanded to create cutting edge knowledge in all sectors with an increased focus on social sciences/humanities, through collaboration between faculty in HEIs in India and reputed universities from across the world. (Launched in October 2018, SPARC has received 1188 proposals in total, of which 363 top-quality proposals have been approved till date in areas of fundamental research, emergent areas of impact, action-oriented research, and innovation-driven research) SPARC also has provision for short-term faculty mobility for research and teaching purposes. In addition to these schemes, the Department of Science & Technology sponsored programs like VAJRA (Visiting Advanced Joint Research) also contributes to faculty mobility.

c) **Secondment of Indian Faculty (2020-21 to 2023-24):** Secondment of Indian faculty will also be taken up in G2G agreements with target countries with special focus on English, STEM, IT, and niche courses as would be demanded.

d) **Offering Indian faculty opportunities to visit top class universities abroad for teaching as well as for undertaking research (2020-21 to 2023-24):** Under the proposed GIAN PLUS scheme (which is being finalized by MHRD), mobility of faculty at reputed HEIs in India will be promoted to teach in the global best Institutions to gain international teaching experience. Also, as part of GIAN PLUS, on a co-funding model (with foreign countries), Indian faculty will be sent to developing countries to teach in their Institutes. This will help in branding the strengths of the Indian education system and improving the diplomatic relations with such countries, apart from giving international teaching experience to the faculty in Indian HEIs.

Facilitate mobility to India of faculty from reputed foreign HEIs: For true internationalization of higher education in India, it is desirable to have, in Indian HEIs, a noticeable fraction of faculty who are foreign nationals. Specific initiatives to facilitate mobility to India of faculty from reputed foreign HEIs will include the following:

a) **Strengthening/expanding initiatives designed to enable faculty from reputed foreign HEIs to teach in Indian HEIs (2020-21 to 2023-24):** The MHRD-supported 'Global Initiative for Academic Network (GIAN)', wherein more than 1283 scholars from 56 countries have visited India and taught in Indian higher education institutions, will be

strengthened/expanded to enable more faculty from reputed higher education institutions abroad to take up teaching assignments at HEIs in India.

b) **Offering opportunities to faculty from developing countries to pursue Masters/Doctoral program in India (2020-21 to 2023-24):** Top-ranked HEIs in India will be encouraged to run a QIP kind of Masters/Doctoral program for the faculty from HEIs in South Asia, South East Asia, West Asia, Africa, etc. MHRD may initiate this program by offering a limited number of fellowships for this purpose.

c) **Encouraging long-term assignment/engagement of foreign faculty (2020-21 to 2023-24):** Apart from GIAN and SPARC, which facilitates teaching and research engagement of foreign faculty for a limited duration, measures will be taken up to facilitate long-term teaching and research engagement by foreign faculty through the proposed GIAN plus program. Under this program, long-term (two or four semesters) assignment/engagement of faculty from foreign HEIs for teaching and research in HEIs in India will be promoted, including designing and teaching courses independently, supervising Master's degree dissertations, etc. This will help promote joint research in a more meaningful manner, including guiding research scholars in Indian HEIs. Reputed HEIs in India will be encouraged to go for targeted tie-ups with reputed HEIs abroad to facilitate recruitment of faculty from foreign HEIs. In the initial phase, it is proposed to target the reputed faculty in HEIs in countries in South Asia, South East Asia, West Asia, Africa, etc. to spend quality time of at least two years, in Indian Institutions. As a part of the effort to attract reputed faculty from foreign HEIs to take up research activities at Indian HEIs, initiatives to create world-class research ecosystem in HEIs in India will be supported through a new initiative by MHRD.

d) **Attracting Indian scholarly talent back to India (2020-21 to 2023-24):** A **'PM Scholars Return to India' program will be designed and implemented** to facilitate active interaction and return of Indian/ Indian origin scholars and scientists to Indian higher education institutions. They will be given academic and financial incentives, with major administrative hurdles removed. The approach will involve three components.

i. **Distinguished Academician Return' (2020-21 to 2023-24):** The main objective of this scheme will be to facilitate deeper engagement of distinguished global faculty/scientists with Indian institutions – by offering them 'dual' appointments at Indian institutions (along with their foreign appointment), so as to spend at least three months every year at the Indian institution. The scheme will be open to tenured academics at top-200 universities of the world. The incentives provided to these academicians/scientists will include: 'Chair Professor' appointment at preferred Indian institution, and title of 'PM Distinguished Academician'; allowing them to maintain dual appointment at foreign university and Indian institution; Highest salary band at Indian institution; One-time relocation cost; One-time research budget; yearly travel budget for first five years upon return; Eligibility to apply for expedited visa and expedited OCI card; providing assistance to spouse of the academician/scientist for employment search and to receive expedited visa. Also, for each distinguished academician/scientist, up to three foreign collaborators will be eligible to receive an expedited visa. Additional responsibilities of these academicians/scientists will include: mentoring at least two Indian PhD scholars/ post-doctoral scholars every year; mentoring a geographically-proximate ATAL Tinkering Lab or ATAL Incubation Centre; and presenting research outputs/findings at a national science-industry symposium in India.

ii. '**Research Sabbaticals' (2020-21 to 2023-24)**: The main objective of the scheme will be to facilitate temporary migration of global academics on research sabbaticals of up to 3 years, where they spend at least three months every year at Indian host institution for at least 3 years (while remaining employed at their foreign university for the period). The scheme will be open to Professors, Associate Professors, Assistant Professors at top 500 universities of the world. The academics who submit a proposal for research sabbatical and are selected for the sabbatical will be hosted at preferred Indian HEI. They will be given the title of 'PM Research Scholar' on completion of the sabbatical. They would be eligible for one-time relocation cost, one-time research budget, applying for research top-ups for two more years depending on productivity, yearly travel budget for first three years upon return, and applying for an expedited visa and expedited OCI card. The spouse of the academic will be assisted in the employment search and will be supported to obtain an expedited visa. Additional responsibilities of these academics will include: mentoring at least one Indian PhD scholar/ post-doctoral scholar during the period of the research project; mentoring at least one proximate ATAL Tinkering Lab or ATAL Incubation Centre, and presenting research output/findings at a national science-industry symposium in India.

iii. **'Young Academician Return' (2020-21 to 2023-24):** The main objective of this scheme will be to facilitate permanent return/ migration to India of young Indian academicians/scholars under the age of 40. The scheme will be open to PhDs and post-doctoral scholars at top-200 universities of the world. They will be offered an appointment as faculty at preferred Indian institution, and the title of 'PM Young Academician.' They will be eligible for appropriate salary band at the Indian institution; one-time relocation cost; one-time research budget; with eligibility to apply for research top-ups for up to five years; and applying for an expedited visa and expedited OCI card. The spouse of the academician will be assisted in the employment search and will be supported to obtain an expedited visa. Additional responsibilities of these academicians will include: mentoring at least one Indian PhD scholar/ post-doctoral scholar every year, and mentoring a geographically-proximate ATAL Tinkering Lab or ATAL Incubation Centre.

e) **Granting institutional autonomy for recruitment of foreign faculty (2019):** Regulation relating to the recruitment of foreign faculty will be eased for all the top-ranked Indian institutions participating in the 'Study in India' program. Institutions of Eminence (IoE) and institutions covered under the Graded Autonomy regulations are exempted from prior permission from MHRD. Similar autonomy will be given to institutions involved in the SII program.

9.5.3. Promoting Institutional Mobility

Target: Specific policy initiatives are taken up for increasing the number of the offshore campus of Indian HEIs abroad and allowing foreign higher education institutions to set up their branch campus within India.

Institutional mobility in the context of internationalization of education unfolds in various forms, such as establishing off-campus centres abroad and giving the franchise to local host institutions. While the Indian higher education policy has not been conducive to instituting branch campuses within India by foreign Institutions, there are examples of some campuses/ branches of Indian institutions, mostly private universities, which are functioning offshore.

Specific initiatives to facilitate global institutional mobility will include the following:

a) **Setting up offshore campuses of Indian HEIs (2020-21 to 2023-24):** Reputed Indian HEIs, both Public and Private, that meet specified eligibility criteria will be encouraged to set up off-campus centres in select countries. MHRD will come up with enabling provisions to permit the top-ranked institutions participating in the 'Study in India' program to set up their off-campus centres abroad.

b) **Enabling foreign universities to set up their off-campus centres India (2020-21 to 2023-24):** Select universities (i.e., those from among the top 200 universities in the world) will be permitted to set up and operate their off-campus centres in India. The Foreign Education Providers Bill will be relooked with an open mind.

c) **Putting in place an enabling legislative/regulatory framework for setting up off-campus centres abroad (October 2019 – March 2020):** Both the Central and State governments will take up the task of amending the Acts of the Central and State Universities to enable the establishment of off-campus centres of reputed Indian HEIs in select countries. A legislative framework for facilitating the establishment in India of off-campus centres of reputed HEIs in other countries will also be put in place. Such HEIs will, however, be required to follow all the regulatory, governance, and content norms applicable to Indian universities.

d) **A regulatory framework to improve the functioning of Education Agents (October 2019 to March 20204):** An appropriate regulatory framework will be put in place to facilitate improved functioning of Education Agents regarding cross border mobility of students and to facilitate the establishment of offshore campuses of Indian Institutions.

e) **Enabling framework to facilitate the establishment of off-campus centres of Network universities (October 2019 to March 20214):** The recent emergence of multi-lateral network universities such as BRICS Network University, University of Shanghai Cooperation Organization (SCO University), and ASEAN - INDIA Network of Universities provide opportunities for more flexibility in terms of offering off-campus centres of Indian HEIs. The appropriate enabling framework will be developed to facilitate the establishment of off-campus centres by universities involved in the Network Universities.

9.5.4. Program Mobility

> **Target:** Program mobility and cross border delivery of higher education programs are substantially enhanced by extending the reach of Open and Distance Learning (ODL) programs and Online courses offered by Indian HEIs and allowing credit transfer to promote the internationalization of higher education.

Program mobility involves the supply of education 'without' the movement of education providers. Under this mode, education programs cross borders while the consumers remain within the country. This mode includes: Open and Distance Learning (ODL) programs involving E-learning, use of MOOCs, and international collaboration in online learning. Allowing other countries to host their courses/contents on India's MOOCs platform SWAYAM, like in Afghanistan and offering online courses and programs to international students through SWAYAM, as in eVBAB – e-VidyaBharati Aroghya Bharati scheme of MEA, for African students are good examples of program mobility.

Specific initiatives will include:

a) **Extending the reach of ODL programs of Indian universities to meet overseas demands (2020-21 to 2023-24):** Indian universities and other higher education institutions will be encouraged to extend the coverage of their Open and Distance Learning (ODL) programs to cover learners in foreign countries to meet overseas demands for enrolling in courses that are relevant to them. Indian universities will be encouraged to launch online and blended learning courses in various disciplines to expand their reach abroad. Necessary portal support (SWAYAM) and funding will be made available to higher education institutions that intend to offer online and blended learning courses to learners abroad. MOUs for the recognition of mutual recognition of higher education qualifications, signed between the countries, will also cover the online learning programs. Indian higher education institutions will be encouraged to offer courses and programs that have universal relevance and validity. They will also be encouraged to work with their foreign counterparts to facilitate mutual recognition of credits accumulated through MOOCs and other forms of online courses for the award of degrees.

b) **Sharing of online courses (2020-21 to 2023-24):** Through Government to Government agreements, collaboration with foreign institutions, especially for sharing of online courses, will be explored. An enabling framework will be put in place for possible international collaboration in online education.
c) **Credit Transfer Policy (2020-21 to 2023-24):** A well-structured credit mapping system supported by credit transfer policy would be put in place to support program mobility, including for certification of students participating in student exchange program / semester abroad program/ twinning programs offered by different Indian HEIs and also for students enrolled in programs offered jointly by an Indian HEIs and an foreign HEI.

9.5.5. Other Enabling Interventions

Target: Various enabling provisions through regulatory and administrative provisions are put in place to promote the internationalization of higher education in a significant way.

a) **Development of internationally relevant curriculum (2020-21 to 2021-22):** Indian higher education institutions will attempt to create a nationally and internationally competitive education. The curriculum, its delivery, learning assessment processes, and the entire educational experience of students should aim at providing an internationally relevant education to equip students with the knowledge, skills, and competencies they need to become global citizens. The National Higher Education Qualification Framework, as well as similar qualification frameworks in professional education, must be aligned with global standards so that students receive internationally recognized qualifications. However, it must be ensured that the efforts towards 'Internationalisation at Home' are pursued without compromising the requirements of the Indian context.
b) **Brand-building campaigns (October 2019 - 2023-24):** Study in India program is aimed to brand India as an educational destination. A systematic brand-building campaign will be undertaken for attracting students and faculty from abroad. This will include using all forms of communication and outreach, including social media. The government, Indian higher education institutions through their Offices for internationalization of education and the Indian Missions abroad will be involved in the brand-building exercise. Also, country-specific strategies will be formulated and implemented. Seminars/workshops highlighting educational

opportunities available in India will be organized in each of the target countries. Financial support will be provided to identify institutions to undertake these events.

c) **Establishing a Centre for International Education (2020-21 to 2023-24):** To facilitate and operationalize effective approaches to the internationalization of higher education, a 'Centre for International Education (CIE)' will be set up. In the initial stage, this centre will be set up as an autonomous entity with the National Institute of Educational Planning and Administration (NIEPA). This Centre will act as a think-tank and a research body to evolve best practices covering strategies analytics, operational practices, and regulatory issues and funding. A dedicated Cell/ Office/Unit for International Education will also be set up within each of the HEIs to support the internationalization of higher education in these institutions. Necessary budget support will be provided to set up and operationalized these Centres.

d) **Assigning weightage for internationalization of education in NAAC accreditation and NIRF/AARIA ranking of HEIs (2020-21):** Internationalisation of education will be given weightage in the NAAC accreditation and NIRF /AARIA ranking parameters. This will incentivize each HEI to focus on internationalization of higher education.

e) **Engagement with Alumni (of foreign origin) of Indian HEIs (2020-21 to 2023-24)**: Indian institutions that have international students will be encouraged to set up a website and organize networking get-togethers (at least through video conferencing) to enable these foreign alumni to act as the Best Brand Ambassadors to showcase the strengths of Indian Higher Education system.

f) **Dissemination of information on education system in India (October 2019 to 2023-24):** An appropriate mechanism will be put in place to disseminate information on education system/accreditation/recognition/ranking process regularly to countries abroad and other stakeholders. This is very critical to avoid any confusion on the diverse but robust education system of India. NIEPA will play a lead role in this regard and bring out an annual publication. NIEPA will also coordinate and ensure articles on internationalization in India, in reputed foreign journals. Financial support will be provided to carry out these tasks.

g) **Formulating a framework for the regulation of education agents (2020-21):** Similarly, there is no regulation to deal with the education agents abroad, potentially involved in sending international students to India. Some private Indian Institutions will also be encouraged to deal with these education agents informally. Due to lack of regulation, EdCIL finds it difficult to deal with them in the SII program.

h) **Strengthening Study in India Portal (2019-20):** The existing Study in India portal would be strengthened with improved features to attract more international students.

i) **Creation of Database (October 2019 to 2023-9-24):** Currently, there is no standard system of knowing the number of inbound students, which pose problems in proper planning. A mechanism will be put in place to track inbound international students' movement, as part of the 'Study in India' program in consultation with MHA and ICCR (MEA). MHRD will develop a comprehensive data architecture - master data repository with 24*7 access to all.

j) **Standardization of processes/procedures (2019-20):** There should be standards and detailed manuals of dos and don'ts, city tour documents, easy access to the internet and mobile connectivity, emergency contacts numbers, etc. that are made available to all international students. All SII institutions will follow standardized processes/procedures in terms of preparatory/bridge courses, admission process, selection tests, scholarships, hostels, food, local assistance and degree/certificate/diploma equivalence with other countries.

k) **Establishing transparent taxation policies (2020-21):** A transparent and friendly taxation policy would be developed for the income earned by foreign faculties in the form of salary and research incomes. Slowly this should be non-discriminatory and should be avoided to attract faculty to come to India. GST should be comprehensively looked at from Input credit as well. Remittances of Indian universities abroad should be eased and standardized –

incentives should be given on their Indian centres concerning foreign faculty, student visits, research exchanges, etc.

l) **Recognition of few cities as high potential internationalization hubs (2020-21 to 2023-24)**: A few cities with existing high inbound international students such as Pune, Hyderabad, and Bengaluru may be recognized as high potential international student hubs. Support facilities on international students' safety, transportation, cultural engagement, community internship, and infrastructure may be developed here in collaboration with relevant state governments.

9.6. MONITORING AND EVALUATION (October 2019 to 2023-24)

A task force will be set up within the MHRD to support and oversee the implementation of different components of the Program. Also, the following mechanisms will be put in place for monitoring and evaluation.

a) Half-yearly progress report on key indicators from HEIs to the MHRD, Government of India;
b) Operationalization of an online PMIS wherein progress under various interventions will be updated in the web portal by HEIs involved in SII program every quarter;
c) Involvement of institutions of repute to make independent and regular field visits to monitor the performance of HEIs;
d) Independent Review Mission (RM) once a year to review the progress of the program;
e) Evaluation studies to support the planning and management of interventions to promote internationalization. The annual meeting of central and state-level personnel to review progress towards the program targets and identify course corrections, if any, required.

9.7. FINANCIAL REQUIREMENTS

The total projected costs for implementing the action plan during the period 2019-24 is estimated at Rs. 9,315.80 crores.

Item of activity	**Detail**	**Cost (in Rs Cr)**
1.. Preparatory activities (Regulatory/policy issues		
1.1. Granting autonomy to HEIs on matters relating to internationalization of higher education, including autonomy for recruitment of foreign faculty by Indian HEIs (Meetings for preparing guidelines)		0.1
1.2. Modifying VISA regime for easing VISA norms, extending the validity of the visa, addressing FRRO issues; allowing paid internship for international students, and allowing Work Permit for international students	The validity period of Students VISA will be for the entire study period, including the possible Work Permit period and allowing paid internship for international students. MHRD will coordinate with MHA to bring out the necessary government regulations about the VISA norms.	---
1.3. Relaxing the ceiling of 15% supernumerary seats per HEI (Meeting for preparation guidelines)	For top ranking SII institutions, the ceiling of supernumerary seats will be raised from 15 % to 30 % of the total seats.	0.1

1.4. Adjusting the Admission Cycle for international students	UGC Regulation: The admission process of international students will be completed at least 4 - 6 months in advance (by December) for the academic session commencing in July every year to help attract international students	0
1.5. Modifying UGC regulations for awarding Joint Degrees (Meetings for drafting the guidelines)	UGC Regulation needed	0.1
1.6. Extending the duration of the Study in India program	SII Program to be extended for at least seven years	0
1.7. Standardization of processes/procedures (Meeting for preparation of guidelines)		0.1
1.8. Assigning weight for Internationalisation of education in NAAC accreditation and NIRF/AARIA ranking of HEIs	Internationalization of education will be given weightage in the NAAC /NIRF /AARIA ranking parameters	0
1.9. Establishing transparent taxation policies		0
2. Enhancing inward mobility of international students		
2.1. Scholarships for international students		
2.1.1. SII Scholarship @ 2.5 lakhs per student per year (18,000 students in 2020-21; 27,000 students in 2021-22; 36,000 in 2022-23; and 45,000 in 2023-24.	Scholarships to be provided to at least 10% of the inbound students. By the end of 2024, at least 50,000 scholarships (10% of the expected enrolment of 500,000 in the year 2024) will be funded by the Government of India	3,150
2.1.2. SII+ Scholarship @ 3.5 lakhs per student per year (2,000 students in 2020-21; 3,000 students in 2021-22; 4,000 in 2022-23; and 5,000 in 2023-24.	SII merit scholarship	490
2.2. Conducting tests for selection of international students and evaluation of test papers (50 countries @ Rs 4 lakhs per year per country	Global entrance examination/tests will be and used for the selection of international students and to identify meritorious students for the award of scholarships.	8
2.3. Hostel facilities in HEIs participating in SII program (Rs 10 crores per hostel for 100 hostels per year)	MHRD will provide Viability Gap Funding (up to 10 crores out of the total cost of Rs 20 cores per international hostel) to 100 HEIs in the next five years.	1000

2.4. Financial support to undergo internship by international students – 4 months duration (10,000 students @ Rs 20,000 per month per student for four months)	VISA restrictions to be removed and one-year post education paid internship will be allowed, extendable by one more year based on the recommendation of internship provider and HEI. The paid internship program will incentivize international students to study in India.	320
2.5. Student Semester Exchange Programs (A total 5,000 outbound students and 5,000 inbound students during the period 2020-21 to 2023-24)	G2G agreement for student exchange with 10 of the biggest global stakeholders such as Study Abroad (US), DAAD, EU (Erasmus scholarships), British Council, etc. will be executed to achieve a bulk student exchange of up to 5000 students in five years.	
2.5.1. Outbound Students Rs. 7,00,000 per semester) (200 students in 2020-21; 800 students in 2021-22; 1000 students in 2022-23; and 1000 students in 2023-24)	Student exchanges will be promoted through Government to Government agreements / Institution to Institution tie-ups.	210
2.5.2. Inbound Students (Rs. 15,000 per month, upto 90,000 for 6 months) (200 students in 2020-21; 800 students in 2021-22; 1000 students in 2022-23; and 1000 students in 2023-24)	Student exchanges will be promoted through Government to Government agreements / Institution to Institution tie-ups.	27
2.6. Young Academician Return Initiative @ 20,000 USD/ Rs. 14,00,000 per year for each academician (100 academicians in 2020-21; 200 academicians in 2021-22; 300 scholars in 2022-23; 400 academicians in 2023-24 (cumulative figures)	Indian students who want to pursue a PhD at top-200 ranked universities in the world will be supported with scholarships (for up to 5 years),	140
2.7. Twinning programs with Network Universities (100 students in 2020-21; 150 students in 2021-22; 200 students in 2022-23; 250 in 2023-24)	To promote twinning and Joint Degrees / Joint PhDs with institutes abroad, MHRD will incentivize selected Indian HEIs with funding	
2.7.1 Outbound Students (10,000 dollars /Rs. 7,00,000 per semester)	Indian HEIs will be encouraged to offer Twinning Programs whereby students enrolled with a higher education institution in India may complete their program of study	49

2.7.2. Inbound Students (Rs. 15,000 per month, up to 90,000 for 6 months)	Students enrolled with a higher education institution abroad may complete their program of study partly in that country, and partly in a higher education institution in India	6.3
2.8. Funding Indian Missions abroad for Internationalization-related activities (50 missions @ 10 lakh per year)	MHRD will fund Indian Missions abroad for specific support from them regarding internationalization, which includes supporting SII branding, communication, assisting all institutions participating in SII in attracting international students.	20
2.9. Signing MoUs for mutual recognition of academic qualifications (Travel cost for visiting countries - Rs 5 lakhs per country for 50 SII countries)	Mutual recognition of academic qualifications with countries participating in the Study in India program	5
2.10. Reducing the charge levied for equivalence certificate (Refund to AIU) @ Rs 3,000 per student (1 lakh students per year)	MHRD will partially refund AIU the charge being levied for issuing Equivalence Certificate to reduce the financial burden for international students	120
2.11. Design/introduce short-term cultural and India-related studies (20 programs per year) (Rs 50 lakhs per program)	Institutions/Universities will also be encouraged to develop and offer specially designed courses on Indian Art, Buddhism, Music, Classical Dance, Indian Languages, Heritage, Yoga, Ayurveda, History, Politics, Development, etc. as these are areas where India has something unique to offer to international students	40
2.12. Consultation with universities abroad for awarding Joint Degrees and expanding twining programs - (Rs 10 lakhs per country for 28 SPARC countries and 30 SII countries programs = total 58 countries)	Consultations to be conducted with universities to promote joint degree programs between Indian HEIs and foreign universities	23.2
2.13. Reinvigorating network universities for twinning programs (50 lakhs per HEI involved in Network University System) (Financial support to 22 HEIs in 2020-21; 32 HEIs in 2021-22; 32 HEIs in 2022-23; and 32 HEIs in 2023-24	Consultations to be conducted with universities to promote joint degree programs between Indian HEIs and foreign universities	59

2.14. Branding of India as an educational destination (50 countries, Rs 2 crores per country)	Brand building exercise through social media, Indian higher education institutions through their International Offices, the Indian Missions abroad and offshore activities	400
3. Enhancing Faculty mobility	The crossborder mobility of reputed faculty will be promoted through existing and proposed initiatives, with special focus on attracting foreign talent for a longer term and also enabling Indian faculty to teach in globally reputed institutions and undertake joint research projects.	
3.1. PM's Academicians Return to India Program (50 academicians in 2020-21; 100 academicians in 2021-22; 150 academicians in 2022-23; and 200 academicians in 2023-24 (cumulative figures)	PM Academicians Return to India' program will be designed and implemented to facilitate active interaction and return of Indian/ Indian origin scholars and scientists to Indian higher education institutions.	
3.1.1. Distinguished Academician's Return Program (Salary cost @USD 12,000 USD per month per person; Relocation cost @ USD12,000 (One month's salary); Travel cost @ USD 2,000 per year; One-time research grant @ Rs 5 crores per person	The scheme will be open to tenured academics at top-200 universities of the world, to facilitate deeper engagement of distinguished global faculty/scientists with Indian institutions – by offering them 'dual' appointments at Indian institutions (along with their foreign appointment),	1,282.80
3.1.2. Research Sabbaticals (Relocation cost @ USD 12,000; Travel costs @ USD 2,000 per year; One time research grant @ 3 crores per person)	Facilitate temporary migration of global academics from top 500 universities of the world on research sabbaticals of up to 3 years, where they spend at least three months every year at the Indian host institution for at least three years (while remaining employed at foreign university for the period).	625.2
3.1.3. Young Academician's Return Program (Relocation cost @ USD 12,000; One-time research grant @ Rs3 Crores; One-time salary grant to meet the expenditure for five years @ 20 lakhs per year;	Facilitate permanent return/ migration to India of young Indian academicians under the age of 40 from top-200 universities of the world.	816.8
3.2. Expanding academic collaboration with HEIs abroad. (Travel cost for visiting 50 countries - Rs 5 lakhs per country)	Tie-ups with reputed foreign higher education institutions will be expanded for knowledge sharing and research collaboration.	10

3.3. Offering Indian faculty opportunities to visit top class universities abroad for teaching as well as research (Rs 20 lakhs per person for 500 faculty per year)	Under the proposed GIAN PLUS scheme, mobility of faculty at reputed HEIs in India will be promoted to teach in the global best Institutions to gain international teaching experience.	400
3.4. Fellowship for faculty from developing countries to pursue Masters/Doctoral program in India (@ 3.5 lakhs per person per year) (50 Scholars in 2020-21; 100 Scholars in 2021-22; 150 Scholars in 2022-23; 200 Scholars in 2023-24 (cumulative figures)	Top-ranked HEIs in India will be encouraged to run a QIP kind of Masters/Doctoral program for the faculty from HEIs in South Asia, South East Asia, West Asia, Africa, etc.	17.5
4. Institutional mobility	Specific policy initiatives will be taken up for increasing the number of the offshore campus of Indian HEIs abroad and allowing foreign higher education institutions to set up their branch campus within India.	
4.1. Setting up offshore campuses of Indian HEIs (Preparation of guidelines)	Top-ranked SII institutions that meet specified eligibility criteria will be encouraged to set up off-campus centres in select countries	0.1
4.2. Enabling foreign universities to set up their off-campus centres in India (Preparation of guidelines)	Top 200 universities in the world will be permitted to set up and operate their off-campus centres in India. The Foreign Education Providers Bill will be relooked.	0.1
4.3. Putting in place an enabling legislative/regulatory framework for setting up off-campus centres abroad of Network universities	A legislative framework for facilitating the establishment of off-campus centres of reputed HEIs in other countries will be put in place.	0.2
5.0. Program mobility	Program mobility and cross border delivery of higher education programs are substantially enhanced by extending the reach of Open and Distant Learning (ODL) programs and Online courses offered by Indian HEIs and allowing credit transfer to promote the internationalization of higher education.	

5.1. Extending the reach of ODL programs of Indian universities to meet overseas demands (Course development)	Necessary portal support (SWAYAM) and funding will be made available to higher education institutions that intend to offer online and blended learning courses to learners abroad	5
5.2. Sharing of online courses (Review of courses)	An enabling framework will be put in place for possible international collaboration in online education	5
5.3 Credit Transfer Policy (Signing of MoUs) (Travel cost for visiting countries - Rs 5 lakhs per country for 50 SII countries)	A well-structured credit mapping system supported by credit transfer policy would be required to support program mobility like student exchange program/semester abroad program/ twining program both amongst the national institutions and also cross border mobility	12.5
6. Other enabling interventions	Various enabling provisions through regulatory and administrative provisions to be put in place to promote the internationalization of higher education in a significant way.	
6.1. Development of internationally relevant courses	The curriculum, its delivery, assessment processes, and the entire educational experience of students should aim at providing an internationally relevant education	5
6.2. Centre for International Education	To facilitate and operationalize effective approaches to Internationalisation of higher education, an "Centre for International Education (CIE)" will be set up as an autonomous entity within the National Institute of Educational Planning and Administration (NIEPA).	50
6.3. Offering specific courses in the English language, including bridge courses:	Specific courses in the English language will be offered as part of the SII Program to attract international students coming from the non-English speaking background.	2.5
6.4. Engagements with Alumni (of foreign origin) of Indian Institutions: @ Rs. 10 lakh per country (20 Countries in 2020-21; 20 Countries in 2021-22; 30 Countries in 2022-23; 30 countries in 2023-24.	Indian Institutions who have international students will be encouraged to engage foreign alumni, who can act as Brand Ambassadors of Indian HEIs	10

6.5. Regulation of education agents	There is no regulation to deal with the education agents abroad, potentially involved in sending international students to India. Some private Indian Institutions deal with these education agents informally	0.1
6.6. Strengthening Study in India Portal	The existing Study in India portal would be strengthened with improved features to attract more international students.	0.1
6.7. Database creation	A mechanism will be put in place to track inbound international students' movement through a master data repository with 24*7 access to all.	0
7.0 Monitoring and evaluation		
7.1. Monitoring & evaluation-related activities	Evaluation studies to support the planning and management of interventions to promote Internationalisation	5
TOTAL (Rs in crores)		**9,315.80**

CHAPTER 10
EQUIP Group 10: Financing Higher Education

BACKGROUND AND IMPORTANCE

10.1.1. The development and calibre of the population of a country stem critically from the extent, coverage, quality & relevance of the education system and in particular, its level of inclusiveness & access. After more than 60 years of Independence and about 50 years of concentrated attention to numerous development parameters & indicators, India has been able to disentangle itself from the shackles of a restrained economic growth syndrome and generate resources for a targeted approach towards social metrics. However, it is in the sphere of education, contextually higher education, that the Government is yet to achieve expenditure & investment proportions that are in consonance with the needs of a rapidly growing population &the rising demands of the pass outs from an expanding school education system; encompass & address equity of access; ensure a stream of financing that enables constant alignment of education with employment needs, progress towards international benchmarks and the dynamic demands of a knowledge-based economy, which the developed countries have achieved notable success in. To put it succinctly, there is no developed or advanced country in the world, which has under-provided for education at all levels or has no systems in place to guarantee higher educational access to all desirous and meritorious students. The education system is the knowledge driver, a provider that carries the youth and consequently, the nation, towards continuously superior developmental and human outcomes. The Governments of such advanced countries are pro-active facilitators of a knowledge ecosystem for their population, with either generous Government funding, or creating a mix of financial support instruments for students and institutions alike.

10.1.2. Expenditure on education in India has not kept pace with the higher economic growth and GDP levels witnessed in the last decade or so. The total Government expenditure on higher education is 2.7% while the entire private sector expenditure on higher education is a mere 0.2% of GDP. To remain commensurate with the perspective of quality & adequacy in education for a country with a demographic advantage of a youthful population, it is imperative that about 6% of GDP is allocated for education, as recommended by the Kothari Commission, as early as in 1964. There is an essential time lag of at least three years between the creation of capacity and its actual utilization to commence, and therefore the expansion of educational infrastructure needs to be a continuous exercise, failing which, a quarter of a generation is likely to be lost unproductively every few years. This has significant social implications for an economic growth process, which in itself, has displayed a skewed and unequal distribution of benefits. A sure shot mechanism to curb cumulative inequality is to establish a robust system of educational access that caters to every section of the population, addresses the inherent income-economic issues, and simultaneously upgrades the content & quality of delivery. Financing of higher education, therefore, emerges as an issue that needs holistic address by the Government for societal priorities. It is an area where there are multiple stakeholders, with the student and the institution as the two units of attention for ensuring access and quality.

10.2. NATIONAL EDUCATIONAL FINANCING PRIORITIES

10.2.1. At various milestones in history, it is often desirable to pause, assess developmental & governance priorities, devise course corrections, and perhaps completely install new initiatives and systems to address the fresh landscape of priorities that arise with time. We are at a serious juncture where top attention is dedicated to industry, commerce, services, space, rural development sectors, etc., but the jigsaw puzzle of adequate investment in nation-wide educational adequacy & equity has not been specifically targeted. An immediate reference is to the Government budgets on education. Private, supplementary investment on higher education, notably from the 100 private Deemed Universities, 10,000 plus Engineering Colleges, and the Management Institutions has plugged the adequacy gap to an extent but not the comprehensive access gap. The 64th Sample Survey highlighted that 21% of successful students from school education who did not pursue further studies, cited financial reasons for not pursuing higher education, mainly professional courses. If this is the access aspect, then the positioning of India as a credible player in the world's knowledge ecosystem necessitates huge investments in superior learning facilities, modern infrastructure, top-end research laboratories and creation of an environment for learning that could attract world-class faculty and retain meritorious students within the country for higher learning. The expenditure figures of top universities in China show a seven-time higher spend as compared to the best institutions in India.

10.2.2. Beginnings have been made regarding addressing these objectives of pursuing higher levels of excellence, but a clear definition of the need for financing education today, would centre around the following categories:

a) Financing of Higher Education Institutions for infrastructure & other facilities
b) Financing of specific needs, areas of priority, e.g., the creation of world-class institutions, technical education upgrade, skill education, distance & online education, etc
c) Financing of the student – no aspiring student to be denied funding for higher education
d) Specific initiatives for channelizing philanthropy into higher education, leveraging technology and emulating international practices
e) Governance and other reforms essential for effective financing, utilization of funding and attracting alternative modes of financing

10.2.3. Considering the complexity of the different categories of funding and the significant funding needs of the sector, sound diversification of the funding streams for higher education is needed. This includes Government funding (both Centre & State), Government guaranteed loan mechanism for institutions (Higher Education Financing Agency, HEFA), Fee Rationalisation, Philanthropy (Corporate, individual, alumni etc), Flexible Student Loans, Performance-based Matching Grants system by Government, Outcome-based Government funding, use of technology to maximise philanthropic outreach (e.g.: crowdfunding), facilitating legislative reforms, collaborative arrangements with private sector in institution creation& operation etc. In the subsequent paragraphs, the details and further fine tuning required to optimize the mobilization of funding from such avenues has been elaborated. Both existing and alternative mechanisms require a set of functional, structural & governance measures also to be instituted for educational financing to attain higher levels so that quality, adequacy & equity considerations are effectively addressed.

10.3. SUMMARY OF PRIORITIES

10.3.1 Financing is never a stand-alone consideration. It is contemplated in the context of specific deliverables and priorities and such Governmental priorities which may govern

the conceptualizing of different financing initiatives. Some of them may look like they are highly ambitious or out of reach, but unless bold targets are defined, the risk of mediocre outcomes is possible. Such priorities are spelt out as under:

a) Raising expenditure on education from 2.7% of GDP to 6% and private expenditure on education from 0.2% of GDP to 1.5%

b) Ensuring the realization of the Indian demographic dividend by supporting the expansion of quality educational institutions as a continuous process

c) Assuring removal of educational inequality, which is critical for future economic inclusiveness

d) Increasing manifold, the government funding for HE institutions & research

e) Making sure that Indian universities get bigger & attract global, CSR, Alumni & alternative sources of funding

f) Recognizing the crucial role of the private sector, considering that nationwide a huge proportion of HE institutions are private ones.

g) Attracting industry funding to function as umbilical cord connect within and outside India for higher educational institutions

h) Establishing and enabling a legal environment for philanthropy in setting up world-class institutions, promoting research, etc.

i) Assuring that students are seen as a unit of attention for enabling equity in educational access – scholarship, sponsorships, loans without denial, use of technology & crowdfunding platform

j) Defining as a concrete target to make sure that by 2023 at least 500 colleges/universities will be recognized internationally for their quality as institutions of world-class stature, and that over 20 years 10,000 institutions from India will have internationally reputed high-quality standards

k) Establishing state-of-the-art colleges in tier-II towns and lower

l) Opening a big window of options for international/ collaborative/ investment funding

m) Creating University Cities in PPP mode with State and Centre as stakeholders with the private sector

n) Using education SEZs as a measure for setting up world-class institutions

All of the above constitute an ambitious but possible plan, requiring an estimated amount of about Rs 30,000 crore in the next five years.

10.4. GOVERNMENT FUNDING

10.4.1. All public universities in a country like the USA, which is a typical example of a knowledge-based economy that derives its nurture from a robust educational system, began with complete and generous funding by the State. Since the establishment of the Land-Grant universities as a result of the Morrill Act of 1862, many of today's well-known research-oriented public universities were funded thanks to grants of land to finance the establishment of colleges specializing in "agriculture and the mechanic arts." Since that time, tax-payer money has been deployed to provide the foundation for a strong learning base. Even though, over decades the level of public funding has witnessed a gradual decline, at the same time universities have further developed their capacity to earn significantly from other avenues like research & consultancy, donations, fees from international students, establishing of auxiliary enterprises, and a fee structure that is not over-subsidized in comparison with private Universities (60% -70% level). Today, say, a University of California at Berkeley obtains about 30% of its income from the State after decades of growth and excellence. A growing source of income of late, apart from the sources mentioned above, is the revenue from various spin-offs and start-ups emanating from the University. All public and private funding of universities are well monitored and linked to performance parameters. The movement to excellence is well supported, but in an accountable framework, with the natural rise in supplementary earnings diluting Government funding over time. The key factor here is that public universities were well provided as institutions, with self-sustainability built into the fee structure and equity issues tackled separately by the Government, without affecting the financial flow of the institution, to enable the University to grow towards self-sustenance over time.

10.4.2. India, being a relatively middle-income nation, still requires education to be well prioritized in the Government Budget to attain the 6% of GDP spending. The entire allocation of MHRD for higher education in the year 2018 is less than what China spends on just two of its Universities, namely Tsinghua University and Peking University. The sheer number of students to be covered in India, the concomitant institutional spread and the crying need to generate an employable human capital, together necessitates a significantly rising Government grant expenditure. The need to revive an operationally weakened higher education system across the country, and the lack of state-of-the-art colleges in tier-II and lower towns clearly points to the need for massive Government funding (both Centre & States), since the investment required is for the very rudimentary stage. The limited capacity of the state to deal out of its funds with the increased demand for higher education due to the significant demographic bonus of India has resulted in significant growth of private colleges and universities. Currently, 70% of the students and 70% of the colleges in higher education are in the private sector, and this is a pinpointer to an area of neglect. A higher- than-existing priority needs to be accorded by all States to higher education.

10.4.3. However, it is imperative that apart from the quantum, the distribution of Government funding is more strategically deployed. In the sphere of Central funding to States, funding has to be linked with the administrative, academic, and financial governance /discipline undertaken by the States. Even in case of funding to Central Educational Institutions, the norm requires a shift from demand-based funding to normative and entitlement-based grants by embedding rigorously defined quality metrics like student success, student access & diversity, meeting workforce needs, research & innovation, etc.

10.4.4. Colleges and universities vary greatly in the students they serve and the resources they have to produce the outputs they prioritize. Flagship Universities tend to have students with more solid pre-existing knowledge and skills, as well as a larger endowment that can be used to hire high-quality faculty and develop programs that contribute to the success of their students. A normalization exercise is necessary to decide the fund flow into a variegated set of institutions, whose priority sets are different.

10.4.5. Further, the NIRF ranking, in absolute and relative scores can be useful in determining a high weightage of the funding to Universities/State Universities/other major Government funded institutions. An examination of the state budgetary trends reveals that both richer and poorer States spend relatively less on education and that political priorities heavily influence such decisions. State universities that accomplish the separation of the institution from external political interference and establish an independent management structure would need to be rewarded with greater funding and enable a movement towards higher excellence. Expenditure on higher education can be made a specific judgment yardstick in the devolution of funds through the Finance Commission. All funding by Government needs a hard-nosed, end-use monitoring mechanism to be put in place. A clear distinction may need to be drawn between autonomy in academics and autonomy in finances while drawing up regulations for higher educational institutions.

10.4.6. The government can provide matching grants to HEIs that generate a surplus and those that obtain research grants, rather than reduce grants in the wake of such increased revenue.

10.4.7. Government grants are currently not student linked, especially in IITs. Due to the subsidized fee structure, an institution that admits more students becomes poorer in all respects.

10.4.8. Alumni grants constitute a small but useful contribution to the kitty of an institution, and these could be supplemented by matching grants from the Government to encourage their inflow and establish a parameter-based grant in place of bulk grants.

10.5. HIGHER EDUCATION FINANCING AGENCY (HEFA)

10.5.1. The Government initiative, Revitalising of Infrastructure & Systems in Education **(RISE)** by 2022 has comprehensively shifted the capital expenditure funding of centrally funded higher, school and medical education institutions away from Budget grants and on to the Higher Education Financing Agency (HEFA). This would apply to all new projects and existing projects which are less than about 75% complete. Given the differential financial capability of the educational institutions, their age profiles, flexibility levels in fee revision, market-oriented content of curriculum, ranking & performance in various parameters, five financing windows have been put in place under HEFA as below:

a) **Technical Institutions more than ten years old**: Repay the whole Principal Portion from the internally generated budgetary resources

b) **Technical Institutions started between 2008 and 2014**: Repay 25% of the principal portion from internal resources, and receive a grant for the balance of the Principal portion.

c) **Central Universities started before 2014**: Repay 10% of the principal portion from internal resources, and receive a grant for the balance of the Principal portion.

d) **Newly established Institutions (started after 2014):** for funding construction of permanent campuses: Grant would be provided for complete servicing of a loan through OH-31. Other Institutions of MHRD with no scope for fee revision or internal resource generation would figure in this category.

e) **Other educational institutions and grant-in-aid institutions of the Ministry of Health**: Sponsoring Department/Ministry to commit complete servicing of the principal and interest by ensuring adequate funds in the OH-31 for the institution.

10.5.2. Institutions in Windows II, III & IV will have to improve their internal revenue generation and shall repay the outstanding Principal amount after a period of 2/3/5 years respectively from the date of completion of the project period. HEFA will assess the performance of each institution continuingly and with prior approval of MHRD, fix a moratorium period beyond which servicing of interest shall also be taken over by the institution in part or full.

The authorized share capital of Higher Education Financing Agency (HEFA) is Rs. 10,000 crore, of which approved Government equity is Rs. 6000 crore while equity participation of banks or Corporates is allowed up to Rs. 5000 crore. Canara Bank, the Government partner in HEFA, would contribute 10% of Government's share. The equity currently available with HEFA is Rs. 3463 crore.

10.5.3. HEFA sanctioning and disbursing process had a slow beginning for the first six months, mainly due to institutions lacking familiarity with the loan documentation process and a complete understanding of the escrow process. The teething problems are overcome now and sanctions to the tune of nearly Rs. 17,800 crore has been made for projects worth more than Rs. 33,000 crore. Disbursements as of now stand at about Rs. 2600 crore.

10.5.4. Observations & Suggestions regarding HEFA mode of financing

a) HEFA is an efficient mode for ensuring better utilization of scarce resources, since loans are project-based &funds are released directly to the vendor on verification of bills by the institution, without any bulk parking of funds.

b) HEFA removes cost and time overruns since institutions will not avail funds until ready for execution and will strive to complete the project on time due to the repayment meter and the need to function quickly & mobilize revenues from the asset created.

c) HEFA fund release process is simple and quick once documentation is complete. The onus is fully on institutions to execute their works and claim loan funding.

d) HEFA has introduced a project culture and greater accountability into the higher education system for the institutions, as opposed to the earlier grant culture.

e) However, all Windows of HEFA involve repayment in various degree by the institutions, with the Government loan servicing in different bands. There is no fully serviced, free window for new higher education institutions and those that lack internal resource

generation ability. There is a period 2/3/5 years after construction when the remainder of the principal has to be repaid by different categories of institutions, which is not achievable for institutions like language institutions, IISERs or universities or even new NITs. There is a fully justified case for one fully free window to be kept for HE institutions like the medical institutions have been given so that educational institutions lacking the ability to generate internal surpluses do not fall into a default/ NPA situation when their turn for repayment obligation arrives. This liberalization of repayment windows is a quintessential requirement for the higher education system. The repayment period for a HEFA loan may be stretched to 15 years from the existing ten years.

f) The State University system is presently not included in the framework of HEFA. States account for about 67% of the total Government spending on education. Hence their inclusion is needed so that their expanding needs in higher education are met in a system that is more accountable and project-based. It is recommended to have a mechanism under which all States will commit to the MHRD upfront, their institution-wise requirement at the beginning of the period and the resources pledged for the escrow accounts as well as the loan repayment obligation. For the State loans, HEFA would provide the loans as per the terms of Window 5, where the entire principal and interest repayment would be guaranteed by the State concerned.

g) HEFA funding should be made available to selective private higher educational institutions satisfying pre-specified criteria of credibility. Since the requirement basket is identical, it would be a step towards providing resources through a competitive mechanism at a moderate cost to private educational institutions. The borrowing private educational institutions would repay the entire Principal and interest to HEFA with no servicing component from the Government.

h) Structured as a Section 8 Company, HEFA is unable to attract equity from private sources since the contribution would yield no return to the investor and it also does not provide the exposure that a CSR grant would have provided to the Company. CSR support thus far has also not been forthcoming since HEFA is a financing entity and not an educational institution itself, which would have provided direct interest and satisfaction to the donor. For the rapidly expanding needs of the higher education system, and if State & Private educational institutions are brought under the ambit of HEFA financing, the equity of HEFA would require a huge increase. The Rs. 4000 crore gap between Government equity and the full authorized capital of HEFA, which is expected from private equity may be reviewed for its non-feasibility and the entire Rs. 10,000 crore may be contributed by Government of India or international funding agencies, with an additional Rs. 5000 crore for the vastly expanded loanee base, since the State Universities and Private Universities, are envisaged to brought under the ambit of HEFA financing. Apart from the leveraging of debt funds that HEFA is expected to carry out, this additional equity would average out the cost of funds for the on-lending to institutions.

i) The current threshold level when the capital expenditure has to go through HEFA by an institution is extremely low. Very minor expenditure, including compound walls and small works of Rs 1-5 crore value, are also having to go into HEFA mode. It is essential that the threshold limit is raised and only substantive projects which have an individual cost of Rs. 15 crores and above may be routed through HEFA and eliminate the irksome scenario currently in vogue.

j) The repayment period of HEFA and the gestation period of the project are mismatched when research infrastructure is also created with HEFA loan. There is a dire need to distinguish and separate research infrastructure from general infrastructure. Only hostels, administrative buildings, physical infrastructure, etc., could come under HEFA and not research laboratories, where the tangible benefits come with a longer time lag.

k) It is imminent that if institutions with surplus funds retire their intellectual property revenue to pay construction bills, then such surpluses with institutions would vanish soon enough and restore the original situation of the need for grant finance back to the Government.

l) The structure of HEFA as a Section 8 Company is restrictive and prevents private/corporate equity investment into it since there is no dividend pay-out permitted. The government can explore the conversion of HEFA into a regular profit-making company.

m) Higher education institutions should further develop their capacity to increase their sources of external revenues by establishing adequate MIS and developing their capacity in areas of alumni, fundraising & financial campaigns. Support from Government in alliance with international organizations can help build capacity at the institutional level by using best practices in India and abroad.

10.6. RATIONALISATION OF FEE STRUCTURE

10.6.1. Any effort to enable and propel Indian higher education institutions to generate greater internal resources and achieve higher levels of self-sustaining excellence will be negated if the fee structure continues to be almost universally subsidized, with further exemptions across certain segments. It would be a travesty of fairness to exhort the institutions to adopt all other forms of additional resource generation when the fundamental cost of education is kept over-subsidized and even exempted for some. Public universities in USA, Canada, Australia, and other countries do not over subsidize educational cost but retain it at a level of about 60 – 70% of private education costs. In a study for China, it actually revealed that tuition costs in China have risen at a much faster rate than the average household income level and inflation. The Chinese Government has established a comprehensive financial aid system ranging from institution to the national level. National financial aid programs play the most vital role in China by providing merit and need-based financial aid to HE students. In an institution like IIT, only 5% of the total expenditure of the institution comes through fees while in USA post-secondary public higher education institutions, it is 21%. **An important consequence of low fee structure in HEIs is that they are not sustainable, gradually limit future growth of the institution in tight fiscal situations and are often regressive since fee subsidy tends to benefit financially better –off students.**

10.6.2. USA, Japan, Korea, Australia, Chile and other countries with high private sector participation in higher education charge fairly high tuition fees as measured by the percentage of GDP per capita, but the gap between them and the public funded institutions is not huge, as it is the case in India. **In India, the entry-level college fee is much lower than the last school fee paid by the student**. It is not related to or based on the cost of education in any remote way as far as State-funded institutions are concerned. The vicious cycle of Poor Finance – Poor Scale & Facility – Poor Quality of Output can be transformed dramatically if the fees are aligned with cost of higher education so that standards are raised across the board and the institution itself becomes more accountable for quality output while making sure that equitable access opportunities remain for those unable to pay for their education.

10.6.3. One method is a variable fees model where the fee is linked with the income level of the student families and be more equitable. The rise in cost for students from disadvantaged sections of society should be met explicitly by the Government in a transparent manner through the Direct Benefit Transfer method to the student directly. Other students may be provided loans (interest-free, subsidized interest, etc.), which is discussed later in this paper. **It is also necessary to consider that in all technical & certain related institutions of the Government, M.Tech fellowships may be completely stopped since they do not relate to research, are largely misused by moderate or under-performing students** and do not serve a fruitful educational outcome. Such fellowships load either the Government or the Undergraduate students or both with undesirable financial baggage. Only fellowships earned through merit from external sources/donors should be prevalent at the M. Tech/MS stage and no automatic funding by Government. Postgraduate fees itself may be pegged at a much higher level without any regulation. Institutions with a NAAC 3.0 and above grade must be allowed a liberalized fee structure regime, and the same should not be fixed by Government, to begin with. Whatever be the need for subsidizing categories of students, the educational institution has to necessarily obtain the full fee, with Government/charity/loans/scholarships directly channelling assistance to the student. **The fee charged may cover the entire running expenditure on salaries, maintenance, and HEFA loan servicing obligations**. This is a well-considered view of the Committee.

10.7. Philanthropy

10.7.1. Philanthropy the world over has been a major financing pillar on which huge, renowned universities/institutions of excellence have been established and grown. Harvard, Yale, Cornell, Stanford Universities in the USA, Central European University, Shantou University and India's own Indian Institute of Science and Aligarh Muslim University are all creations of philanthropic largesse. Philanthropic funding flows into entire institution building, corporate endowments, specific research and unitary purposes like hostels, laboratories, the institution of chairs, a student-centric funding based on merit, need a subject, etc. Also, some universities across the USA receive significant alumni funding to the tune of nearly 3 % of their revenue in all forms. In India, philanthropy as a mode of financing education has not been optimally explored as yet.

10.7.2. A high-quality education system requires capital that is not profit-seeking, and such capital has to be attracted in a significant manner in all Indian institutions. Charity as a percentage of GDP is very less in India as compared to advanced countries. Philanthropy is the complete prerogative of the donor, and hence a flexible ecosystem for charity has to be facilitated by the Government and institutions. The Kasturirangan Committee pointed out that raising funds for education through philanthropy would improve if the funding is facilitated to be raised in various ticket sizes, needs are devised to fit the philanthropist's budget, and the raised funds are tied to a specific initiative or item – research program, chair, buildings, students, laboratories, etc. Also, it would be desirable to offer the Naming Rights to the philanthropists. Higher education institutions in India need to create a culture for alumni to reconnect, devise suitable vehicles for such funding and give due recognition for the contributions. It is a fact internationally that institutions higher in excellence receive greater philanthropic funding than in India (Indian examples are IISC, IITs, etc.).

10.7.3. The fiscal policy of a country towards philanthropy plays a huge role in donor behaviour towards education. The present CSR policy framework does not give any tax exemption under the Act for donations, and it is actually a cost to the Company. A framework

modification is necessary for garnering resources. 100% tax exemption under 80G is applicable only on donations to certain notified institutions of national eminence and not all. The Narayana Murthy Committee Report to Planning Commission had suggested that a 300% tax exemption should be given for all donations to education. This may be desirable to be implemented to the extent of 100% of the donor contribution without undue specification of eligible institutions. This Committee also recommended the provision of land by Government on a 99-year lease for the private sector to establish universities. With the State Government as a regulating stakeholder, with appropriate revenue sharing, this option requires to be implemented. A full tax exemption is necessary for donations to education and particularly given the backward States in the country, higher education should be categorized as a priority sector for tax exemption, and the Corporate sector requires to be mandated to spend a portion of their 2% CSR obligation in education, with full tax exemption. This would galvanize the process of fund flow into higher education.

10.7.4. Philanthropy into higher education is potentially a multi-billion activity, as demonstrated the world over. Charity, especially international, looks out for encouragement, unfettered, and hassle-free avenues. The present regulatory & tax framework does not permit foreign donors contributing to Indian HEIs without the domestic HEI obtaining an FCRA clearance from the Ministry of Home Affairs. A liberalized FCRA framework -with proper safeguards being established, is essential for the HEIs to empower them to receive foreign grants for research and institution building in a seamless manner. As far as domestic philanthropy is concerned, apart from the blanket tax breaks for investment in universities, the mega-rich corporate houses and individuals should be roped in by invitation to set up universities with complete tax exemption during construction and autonomy in operation once established. The fact of the matter is that there are just a few universities in the USA, which are on a 'for profit' basis. The overwhelming majority of private higher education institutions are not for profit ones. The same can be replicated in India provided a fully incentivized legal & fiscal architecture is also institutionalized. Philanthropy in education must be institutionalized the way it is in the USA and other advanced countries so that a massive creation of institutions can take place to boost the GER substantially. It is very clear that the absence of a liberal tax regime is the main factor preventing donor fund flow into the Indian University system.

10.7.5. 'Development Office' in HE Institutions for Philanthropy

All leading universities in the USA, UK, Canada, and other countries have a Development Office in the campus that is exclusively dedicated to sourcing and dealing with philanthropic contributions to the University from alumni, corporate, individuals, etc. Apart from direct contributions, the Development Offices, usually staffed by professionals in the field, devise and structure a variety of philanthropic products to suit the budget, preference, and time frame of the donor. Indian universities, like the leading US universities, may work on devising a series of philanthropic products like the following ones:

a) Bequests or gifts through the estate by including a provision in will or trust, or by naming the University/College as a beneficiary of a retirement plan or life insurance policy. The amount left to the university can be expressed as an absolute amount or as a percentage of the assets to be given.

b) Life Income Gifts - A life income gift allows a person to give assets to the University while providing oneself or others with income for some time before the University is permitted to use the gift. A life income gift can be made by transferring securities, cash, or other property to the institution or a trustee. The University or Trustee then manages

the investment of the assets and pays an income to the person; his/her designated beneficiaries, or both. Income payments can continue for the beneficiaries' lives or, in some cases, for a term of up to 20 years (this model adopted in Stanford University).

c) Charitable Gift Annuities -In exchange for an outright gift, the University agrees by contract to pay a fixed amount each year to the donor/or another beneficiary for life

d) Charitable Remainder Unitrusts –A Trust is established from which the donor and/or other beneficiaries receive *variable* annual payments for life and/or a term of years. At the end of the term, the remainder of the trust assets goes to the University for the purposes designated by the donor.

e) Pooled Income Funds –Donor's gift goes into an investment pool that functions like a mutual fund. Investment returns are paid to the donor and/or other beneficiaries for life, after which the gift is withdrawn and used to support the designated purpose at the University.

10.7.6. Crowd Funding

a) A comprehensive method of channelling donor money for the benefit of institutions and students alike could be through a mega Crowd Funding Portal. The portal would be opened with a large number of student and institutional needs indicated as well as the donor priorities. This would be a digital platform for connecting student needs, infrastructural needs & research needs in an open, transparent, and continuous manner. Donors would have the option of choosing a student(s), institutions, other educational purposes for either sponsoring in part or full or meeting a part/full need of an institution. This National portal (like the existing Vidyadhan Portal) would serve as a comprehensive gateway for a donor-beneficiary mapping and facilitate an accessible channel for millions of currently anonymous donors wanting to make contributions to the education system or students. The process flow in case of student assistance would be as follows:

i. The student applies to a select set of institutions for the admission

ii. Admitted students are eligible for a scholarship based on criteria set by the donors

iii. Donors submit criteria for selection of students

- Students selected based on income
- Students selected based on academic achievement/ gender
- Students selected based on region/ institution/ discipline

iv. Students submit periodic performance reports to be shared with donors

v. Overhead of running the portal is low and run privately

vi. Need to support about 10 lakh students across all disciplines

vii. Government to launch a National movement for each family to support at least one student (Each One Teach One)

viii. An avenue to be created for the contributions gets tax benefits, similar to donations made to CRY, etc.

b) A portal of this nature, www.vidyadhan.org has been in operation with considerable success. A team comprising faculty from IIM Kozhikode and University of East Anglia conducted an Impact Assessment of the portal, and their encouraging findings are as follows:

i. 47% of the UG and 11% of the PG sampled beneficiaries said that they would not have been able to complete their studies without the scholarship

ii. In terms of bridging affordability gap, affordability expressed by parents is 92% at plus 2 levels, 22% at UG level and 25% at PG level

iii. Average annual starting take-home salary of the beneficiary sample was Rs.1.95 lakhs within 2-3 years

iv. The overall average rate of return in the first year of employment is 194%

v. 88% of the beneficiaries came from BPL families
vi. 50% of those employed were able to increase the family income by twice in 1-2 years
vii. In terms of human capital, 100% of parents and 92.2% of the employed beneficiaries were highly satisfied with their career progression.
viii. https://www.vidyadhan.org/ImpactStudy gives further details of the evaluation of the vidyadhan portal

c) Doubtless, to mention, a crowdfunding portal for both students and institutions to receive scholarships, institutional grants is a mechanism with the most far-reaching effect and can effectively mobilize assistance for lakhs of students if accompanied by due IEC activity by the Government. This would need to be commenced before the month of June, in time for the academic session. The portal has the potential to raise at least Rs. 25,000 crore per year.

10.8. RESEARCH FUNDING

10.8.1 An important element of funding in a higher education institution is research funding, which provides specific activity-based funding and also generates institutional revenue through the amount of the overhead deposited into the institution. This overhead fees may be raised to at least 25% since the institution is not only facilitating the operation of the project but will also be incurring the maintenance cost of the assets created under the project. Further, the surplus amount deposited into the Endowment Fund from such and other sources may not be subjected to the GFR rules of the Government. Flexibility may be given to the institutions to invest the amount in instruments with the highest yields. An important reason why China, Hong Kong, and Singapore have mobilized high funding into research is that they have in place effective Government matching fund programs and favourable tax incentives. This raises competition among HEIs and generates interest among potential philanthropists.

10.8.2 The area of Research Funding requires a convergent approach from the Government by merging all scientific research schemes into one and aligning the industry with the corpus. Basic sciences need to get high priority for India to emerge as a knowledge economy. Research attracts funding if the area of study is in line with industry need and the project scope is developed in consultation with industry. Therefore, industry connects as a culture needs to be promoted in HE institutions so that it automatically caters to the funding channels. A separate crowdfunding platform for research may be developed and launched so that institutions & industry have a robust, interactive relationship and both research areas and funding avenues are articulated transparently across a large body of researchers in the country. Such a crowdfunding platform for research would introduce a healthy competition between institutions for grants and eliminate the monopoly of premier institutions garnering most of the grants.

10.9. RASHTRIYA UCHHATAR SHIKSHA ABHIYAN SCHEME (RUSA)

RUSA is a Centrally Sponsored Scheme being implemented by the Department of Higher Education for the benefit of State Higher Education Institutions , extending holistic support for enhancing overall quality of the institutions, ensuring conformity to certain prescribed norms, accreditation systems, introduction of transformative governance reforms, in affiliation & academic systems, for quality faculty availability & capacity building, boosting infrastructure in existing institutions, establishing new institutions, setting up of model colleges, etc. Started in 2013, the Central Government has so far released Rs. 5100 crore to States under the scheme. RUSA has had a far-reaching impact on the state higher education system, especially the backward and far-flung States. The scheme has not only funded critical infrastructural gaps in colleges &

universities in States & enabled the creation of new higher education institutions across India but has also successfully ensured NAAC Accreditation of a large number of colleges and universities in the country. Even a small & far-flung State like Sikkim with 12 colleges have seen the accreditation of 6 colleges in the last few years, and the rest are in the process of obtaining it. RUSA has driven such holistic improvement in the quality of education over a large number of States in the country. It is necessary that a well-targeted and well-monitored approach like RUSA is continued in an enlarged manner in the future. The inclusion of State Universities under HEFA should provide funding on a much larger scale to States, and after 2020, the RUSA scheme may be subsumed under EQUIP to be able to garner resources of a larger quantum.

10.10. GST FACTOR

A taxation related issue that affects the cost of education is that the education sector is stranded in the GST fiscal regime. Education as a service is exempt from GST but the services hired, engaged by the institutions through consultants, contract faculty, Visiting faculty, taking foreign research grants and all internal expenses incur 18% GST, which cannot be passed on ahead since the sector is GST free. Therefore, educational institutions bear GST on inputs but cannot avail tax credit, being GST free. Thus the cost of education is increased significantly, as also a reduction in the value of grants received from abroad. GST on all educational services, therefore, needs to be removed or at least reduced to 5% levels. A Higher Educational Council may be established with MHRD as the authority to decide/recommend to Ministry of Finance on all the difficult taxation matters which are inhibiting full growth of the Indian higher education system.

10.11. EDUCATION SPECIAL ECONOMIC ZONES

10.11.1. Any comprehensive effort to revamp, modernize and impart a spectacular impetus to the higher education system in India would need to consider the fact that just two Indian higher educational institutions are ranked in the top 200 in the world. International rankings are important in the current context while we seek to position India alongside global benchmarks in other spheres of activity. Educational benchmarks the world over are of direct relevance since it is Indian human capital that requires to be educated at world class standards so that they are employed and function in a world-class work environment, in a fast-changing world. SEZs in higher education will enable the entry of top international universities into the country to offer academic programs of high quality in India directly.

10.11.2. The need is for enabling legislation in the Government of India for the creation of such SEZs, one in each State, for the establishment of world-class universities. Indian universities and the corporate sector could also be permitted to set up institutions in such zones, which would be based on transparent criteria. The concept of an SEZ is important in a world-class ecosystem context because of the need to create a system where certain rules, fiscal & other regulations applicable in the rest of the country will not be applicable for institutions in this area. The entire funding for the creation of universities in the zone will come from either the private sector or the international sector if the entire framework of tax and CSR regulations are re-examined to incentivize educational institutions, in a manner carried out for industry in SEZs. The most critical measure to effect a quantum leap in Indian higher education could come from Education SEZs.

10.11.3. A Special Task Force at the very top level is required to recommend a vision, strategic plan, legal & regulatory processes, institutional mechanisms, policies, financial architecture, and prioritization mechanism for Education SEZs. This could be the shortest and most effective 'in-house' route to increase the number of world class

universities in India in a complete sense. This Task Force requires to be constituted within a month and asked to submit its Report in two months.

10.12. Student Scholarships, Loans, and Issues

10.12.1.1. There is no ambiguity in articulating that there must be instant and universal access to student loans for HEIs. The loan amount must be adequate to cover tuition fees and living expenses. Need-based scholarships are as important as to merit-based scholarships as they promote inclusiveness in a fee de-regulated education system that is being advocated in this paper. India's scholarships are mostly merit-based, and the bulk of the other scholarships are from Ministries like Social Justice & Empowerment, Tribal Affairs, Minorities, etc. There is the further feature that students from socially disadvantaged sections get full fee waivers and also, fully retain the scholarship amounts obtained by them from the respective Ministries. Therefore this constitutes a double cost to Government that needs to be addressed. To generate and incentivize private scholarships into higher education, the Narayana Murthy Committee had recommended the setting up of Rs. 1000 crore scholarship fund with entirely private contribution and complete tax exemptions. This is a worthwhile recommendation for the Government to take up so that the financing needs of poorer students can be addressed in an additional and perhaps growing manner.

10.12.1.2. In the area of student loans, some options that could be adopted, are as follows:

a) Income contingency loans: It consists of a Study Now-Pay Later method where the student pays only a fraction of the fee upfront, and the rest of the fee is deferred with a commitment to repay after graduation, the extent of repayment being linked to his/her income after employment over a period of 10 years after employment. Through this model, it is the student who is paying for his/her education, not the parents and the student is also able to pursue a career of choice and taste, which may be less remunerative, without undue pressure of loan repayment. This mechanism has been established in various countries with significant success.
b) Interest rates on loan can be lower for high scoring students in entrance exams
c) To ensure equity, loan architecture must take into account the choice/location of the institution and the nature of the study to structure accordingly
d) In a full scholarship/student loan scenario, tuition fee must go directly from the providing agency to the HEI and need not be routed through student
e) RBI's Model Education Loan scheme to be followed by banks in terms of tenure of loan (10 years), rates of interest and security requirements

10.13. Corporate Participation in Higher Education

10.13.1. Given the significant existing level of private participation in college education in India, the corporate sector, which is a direct beneficiary of the higher education system, is a key stakeholder in the sector. It can play a key role in improving India's higher education system and drive it in the direction of excellence and meeting world benchmarks. Corporations can collaborate with academia in several ways, with varying funding commitment ranging from direct ownership and management of institutions to collaborating with the higher education institutions in research, faculty development, infrastructure creation, student scholarships, and governance.

10.13.2. The Narayana Murthy Committee made several recommendations towards enhanced private investment into higher education, which are relevant for this Report. The key ones are summarized as under:

a) Higher education institutions must have complete financial, administrative, and academic autonomy, accompanied by a stringent accountability framework. Autonomy specifically may include freedom to fix fees, the decision on subjects, faculty, curriculum, salary structure, freedom in admissions, etc.

b) Accountability framework should be driven by an MoU between the institution and the Government based on the assessment of outcomes

c) Governance to be based on arms-length relationship between the institutions and organizations like UGC which neither fund nor decide heads of the organisation

d) In terms of resources, land should be allotted near free of charge for 999 years for setting up the entire educational ecosystem, including residential and health facilities. Norms for FSI to be liberalized to encourage compact campuses and ensure optimal land utilization in urban centres. Usage of land must have some flexibility provided the purpose is educational

e) Contributions made by Corporate sector to a University or research centre approved by Government to obtain a deduction from taxable income of 300% (100% can be considered)

10.14. A Financial Model for an HEI – Typical IIT in India

- **REVENUES**
  - UG students 4000 nos @ Rs. 4 lacs = Rs. 160 crore
  - M. tech students 3000 nos @ Rs. 4 lacs = Rs. 120 crore(no subsidy for M.Tech students)
  - PhD students 4000 nos.@ Rs. 4 lacs= Rs. 160 crore (no subsidy for M. Tech students)
  - Research overhead @ 25% = Rs. 125 crore (overhead % is increased to 25%)
  - Hostel fees, guest house, additional course revenue= Rs. 30 crore
  - Industry support for institute 10 nos.*10 Crore each = Rs. 100 crore
  - Alumni funding = Rs. 40 crore
  - **Total of 735 crore**
- *Additional sources of revenues for education and research*
  - 1% (50%) of CSR contribution by corporates
  - SPV either for institution funding or student funding
- **EXPENSES**
  - Salaries - faculty, admin & contract – Rs. 350 crore
  - Pension expenses – Rs. 150 crore
  - Maintenance – Rs. 100 crores
  - HEFA repayment - 100 crores

Total of 700 crores

- **How to fund student fees?**
  - Direct PhD grant to a student from government
  - Direct M. Tech grant to a student from the government (discontinue fellowship for M. Tech students)
  - PhD fund from research project & not Institute
  - Deferred student fees by SPV by the institutions/ SPV by Government
  - Student scholarships through a crowdfunding portal
  - A PhD grant from private sources, industries
  - Student loans

10.15. Governance Structure of IITs

The Committee to re-constitute the Boards of IITs along the lines of IIMs had made certain recommendations in February 2019, of which the most significant ones is that the Chairman of an IIT would be appointed not by the Visitor but by the Board of the Institute. Another key recommendation is that distinguished alumni of the Institute should also be appointed on the Boards of IITs, along with two women representatives.

10.16. Funding of a Generic US University

10.16.1. The typical funding pattern in a public funded US University is as follows:

- Public Universities funded through:
    - Taxpayer money (the richer the State, the greater the funding)
    - Competitive grants available for both public and private Institutions
    - Public universities also access corporate, business, endowment, etc. funding
    - Alumni funding
    - Fees of public universities not over-subsidized (60- 70% of private universities)
    - Revenue from spring offs, start-ups created which are a rising source
- 20-35% comes from tuition fee, 80% (other sources) grants, consultancy
- Pressure on faculty to boost University revenue. Incentives for faculty and their departments for their pursuit of additional research funds
- Fees revenue is not used for research. The logic is, "Why should a student pay for faculty research needs?"

A special dispensation is allowed in certain US universities that only ten months pay is paid by the University to the faculty and he/she is expected or is free to earn for the remaining two months from any source, be it consultancy or parallel assignment or any vocation whatsoever. This is said to favour the faculty more than the University because of the inherent flexibility every year for two months when he/she is with complete freedom to do any job.

10.16.2. A typical funding model for State universities may be worked out in consultation with some key State Governments and developed with a sound, independent governance structure to form the basis for Central Government funding.

10.17. OTHER IMPORTANT RECOMMENDATIONS

10.17.1. Indian universities must get bigger with more effective use of the infrastructure with longer-term funding. Tenure of HEFA loan to be raised to 15 years

10.17.2. Among the HEFA reforms, the cost of maintenance of assets created must also be considered while reviewing the total cost to Government.

10.17.3. Funding scale must be such that more world-class universities are created in India over the next 20 years, with world-class infrastructure, faculty, and students

10.17.4. The governance structure of the university system must be transformed drastically into a professional and functionally autonomous one, with a regulatory structure that is independent.

10.17.5. A huge initiative must be taken in the country with State and Private partnership to set up at least one University City in India on the model of a Texas A&M University in the USA, where the entire ecosystem will revolve around the University. The governance structure of the institutions in such University cities may serve as an example for the rest of the country immediately. Several examples of this kind in many countries can be used as a case in point.

10.17.6. Standalone research institutions must be affiliated to a University to improve their credibility, outreach, and funding.

10.17.7. Research grants should be competitive in nature and in line with national priorities. HEIs should be encouraged to commercialize the research outcomes and wherever feasible, generate internal revenues.

10.17.8. Opening up of sophisticated research equipment by HEIs to industry and other external users to both improve their utilization and also earn revenues through them.

10.17.9. Maintenance costs of assets created continuously should also be aligned with the fee structure dynamically.

10.17.10. The University Grants Commission would need to rework its range of guidelines in respect of State Universities and incorporate the governance and accountability criteria. This would also apply to the Central Universities. A structure where funding and accountability are linked would generate both peer pressure and competition for grants, which is missing in the current framework.

10.18. GIST OF KEY RECOMMENDATIONS

- **a)** Government funding to rise substantially but to be based on the backwardness of the area of institutions, quality matrices, student equity & access factor and funding of world-class facilities, in a tapered manner
- **b)** HEFA financing windows to be liberalized with greater inclusiveness by extending funding to State Universities & Private Universities
- **c)** Crowd Funding Portal to be established for student scholarships and institutional grants
- **d)** Facilitating a legal environment for philanthropy – tax exemptions are needed
- **e)** Fee revision to be based on the cost of education; protect the institution from fee subsidy
- **f)** Students need assistance to get it directly through DBT/scholarships, loans, etc.
- **g)** Sound governance structure to be established in all State & Central HE institutions
- **h)** Typical funding model to be worked out for State Universities with funding based on performance metrics
- **i)** Attract private participation in education, with suitable tax breaks & enabling environment, to enable top quality, internationally benchmarked higher educational institutions.

All recommendations, suggestions& reform measures indicated in the paper are implementable within a very short timeframe, including the legal framework reforms, tax incentives, and the measures needed to promote world-class universities. The initiative rests with the top echelons of the Government to recognize and transform the architecture, pattern and the very approach of the Government to higher education in the country and introduce mechanisms for a world-class education ecosystem to be in place for the creation of superior Indian human capital.

10.19. SUMMARY OF FUND REQUIREMENT

Additional HEFA Equity of Government over & above existing Rs. 6000 crore - Rs. 5,000 crore

CHAPTER 11
EQUIP financing and implementation systems

11.1. A total of Rs. 1,72,490 Crores would be required for the implementation of the proposed initiatives under EQUIP across the ten thrust areas over a period of five years (2019-2024). Of the total investment, Rs. 74,880 Cr will be flowing to the Centrally funded institutions, and Rs.97,610 Cr would flow to the institutions aided by the State Governments. The private institutions would implement these initiatives but at their cost.

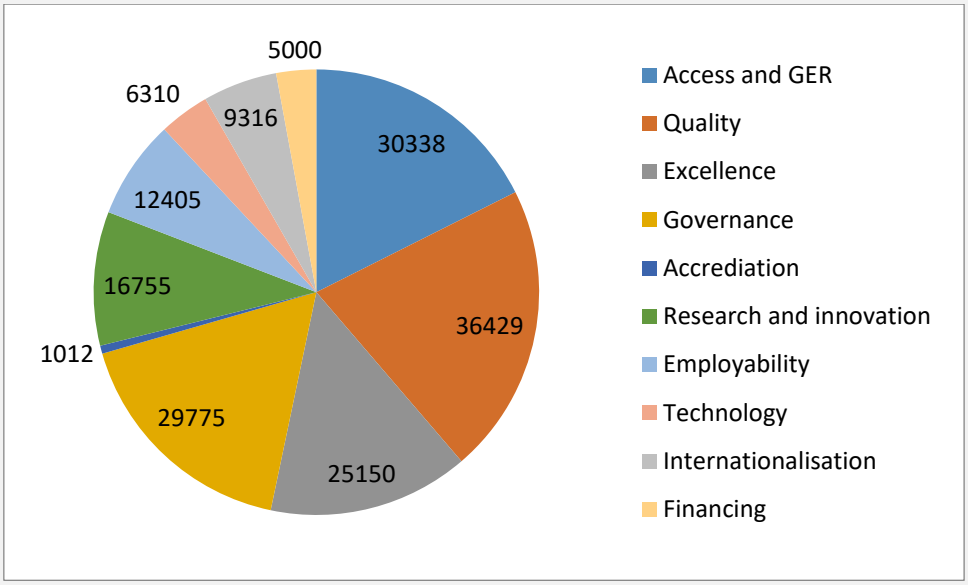
11.2. This has to be a national effort with the participation of the Central, State Governments, and the private institutions. Whereas the Central Government would provide for the implementation of these initiatives in their institutions, they would support implementation in the State institutions by contributing at least 60% (in northeast and hill States 90%) of the cost of implementation in State institutions. Accordingly, out of the total investment, Rs. 1,34,564 Crores (78%) and Rs. 37,926 crore (22%) will be the share of the Centre and the State Governments respectively. Of the Central funding of the State institutions, 52.31% of the total devolution would be allocated towards improving quality, promoting excellence, and research and innovation, reflecting the overriding emphasis being put on enhancing the quality in higher education as laid down in the New Education Policy.

11.3. Following is a detailed break-up of the finances allocated to each of the thrust areas:

Table 11.1: Break-up of the finances allocated to each of the thrust areas

			Cost as per management		Share of funds		
Group	Focus	Total cost (Rs Cr)	CFIs (Rs Cr)	State institutions (Rs Cr)	GoI (Rs Cr)	State Govt (Rs Cr)	% share
Group 1	Access and GER	30338	6068	24270	20630	9708	17.59
Group 2	Quality	36429	14572	21857	27686	8743	21.12
Group 3	Excellence	25150	15090	10060	21126	4024	14.58
Group 4	Governance	29775	8933	20843	21438	8337	17.26
Group 5	Accreditation	1012	506	506	810	202	0.59
Group 6	Research and innovation	16755	10053	6702	14074	2681	9.71
Group 7	Employability	12405	3722	8684	8932	3473	7.19
Group 8	Technology	6310	4417	1893	5553	757	3.66
Group 9	Internationalisation	9316	6521	2795	9316	0	5.40
Group 10	Financing	5000	5000	0	5000	0	2.90
		172490	74880	97610	134564	37926	100.00

Figure 11.1: Expenditure proposed on each of the thrust areas



11.4. Funding Mechanism through HEFA:

a) The funds to be spent from the Central Government (Rs. 1,34,564 Cr only - since the equity for HEFA would be through a Capital grant) would be drawn from the Higher Education Funding Agency (HEFA) under Window-IV i.e. the entire loan portion will be entirely serviced by the implementing agency (a special purpose vehicle) through grants received from the Government.

b) The mandate of the HEFA would be amended to provide funding to the extent of Central Government share for the project through the SPV, to be serviced through Government grants over 10 years. However, the funding by the States about their operation of the project would be borne with the State budget grants only.

c) **Funding Modalities:**

i. The funding from HEFA would be to the implementing agency (SPV) for the projects appraised by the Competent Authority at the Government level. The SPV would be responsible for its proper use and accounting.
ii. There shall be an EQUIP Fund Account (EFA) maintained by the SPV with a minimum amount of Rs. 100 Cr and all the institutions which have been sanctioned funds under EQUIP would be electronically linked to the EFA using the *maker* and *checker* mechanism.
iii. Every institution will get a Virtual Budget under each of the initiatives based on an Institution Development Plan (IDP) prepared at the beginning of the project, as per the funds allocated under the EQUIP.
iv. Within the virtual budget, the institution can authorize payments for the expenditure incurred using an online fund disbursement platform with the *Maker-Checker System.*
v. The pay orders so generated by the institution, if by the validations set under the virtual budgets, would automatically be cleared by the EFA.
vi. As and when the funds from the EFA reach Rs. 10 Cr level, there will be a request and release of funds from the HEFA, subject to the approved loan amounts. The EFA, therefore, is replenished from time to time through the release of funds through the HEFA.

vii. The funds released for implementation of the project would be a grant to the institution, but SPV would repay the same to the HEFA from the Government grants from its annual budgets. For this purpose, a separate budget line would be opened in the higher education budget estimates starting from 2019-20 till 2032-33.

Table11.2: HEFA Fund Flow Mechanism

Amount needed	2019-20	2020-21	2021-22	2022-23	2023-24										
129564	12956	32391	38869	38869	6478										
		Repayments to HEFA (Rs Cr) - Grant in aid to the SPV													
	Draw from HEFA	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2019-20	12956	1425	1425	1425	1425	1425	1425	1425	1425	1425	1425				
2020-21	32391		3563	3563	3563	3563	3563	3563	3563	3563	3563	3563			
2021-22	38869			4276	4276	4276	4276	4276	4276	4276	4276	4276	4276		
2022-23	38869				4276	4276	4276	4276	4276	4276	4276	4276	4276	4276	
2023-24	6478					713	713	713	713	713	713	713	713	713	713
	129564	**1425**	**4988**	**9264**	**13539**	**14252**	**14252**	**14252**	**14252**	**14252**	**14252**	**12827**	**9264**	**4988**	**713**

11.5. RUSA as the Special Purpose Vehicle (SPV):

a) The existing RUSA centre, which has been implementing the RUSA program, would be upgraded into a EQUIP Society (EQUIPS) by the Ministry for this purpose. The EQUIPS would be a SPV for implementing this project and would be dissolved after its implementation and evaluation. The Board of Governors (BoG) will have the following composition:

i. Chairperson
(Shall be the Secretary, Higher Education)

ii. CEO (Chief Executive Officer)
(Shall be an academician who shall be a full Professor in a reputed institution holding an experience and expertise in implementing programs in the field of education for at least three years. He/She shall be appointed by the BoG)

iii. Chairperson, UGC

iv. Chairperson, AICTE

v. 10 Chairpersons of the thematic verticals

vi. 5 State Government representatives (on a rotation basis)

b) Program Verticals: 10 program verticals would be set up, each under the Chairmanship of a reputed academician or a leading public intellectual. Each vertical would be assisted by two Young Professionals (YP) who shall have a minimum qualification as Post Graduate from a premier institution in India or abroad. The vertical would have the powers to finalize the investments, action plans, and timelines.

c) Functions of SPV:

i. Build capacities of all the stakeholders for implementing the program

ii. Constitute Working Groups with experts to oversee implementation of the initiatives in each sector

iii. Set up an advanced IT portal which would allow sanctions and monitoring of the progress of fund transfers on a real-time basis
iv. Conduct Evaluation Studies of the outcomes during the project implementation period and also at the end of the day
v. Document best practices and bring out publications on the progress
vi. Maintain a common data repository, and conduct and induct data analysts who would suggest policy options for future implementation
vii. Identify critical gaps in implementation, propose solutions and implement the same to ensure smooth implementation of the project
viii. To apply for and get the required sanctioned funds from the HEFA for implementation and receive the Government grants required for servicing the HEFA loans. Proactively share and seek consultations with the State Governments in implementing the initiatives and resolve difficulties, if any arises
ix. Put in place a state-of-the-art time fund transfer mechanism which will allow demand to pull and funds based on the actual expenditure, and thereby eliminating in-parking of funds.

d) Location of SPV: The SPV will be located in RUSA Resource Centre, New Delhi

CONCLUSION

The above framework lays down the intervention strategies formulated by the ten expert groups to be implemented under EQUIP. The strategies conceived sets out the direction for addressing the issues currently afflicting the Indian higher education ecosystem and towards enabling higher education institutions to deliver on the goals of access, inclusion, quality, excellence, and employability in the coming decades. Apart from being a holistic program in itself, EQUIP also envisages itself as the overarching policy interface, which will build a synergy between the existing initiatives in higher education and the freshly proposed initiatives over time. The next challenge is to implement these transformative initiatives in the coming five years. This can be achieved through a spirit of partnership and engagement at all levels of the higher education system and through appropriate implementation arrangements facilitated at the level of the Centre, States, and the Institutions.

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ANNEXURE

Constitution of Expert Groups

1. In order to give a multipronged boost to the higher education system in India for it to be ranked among the global best, and to bring a transformational change in the system over the next five years, it is proposed to put together an action plan named, "Education Quality Upgradation and Inclusion Program (EQUIP)" for implementation between 2019-2024.

2. Some of the objectives of the program are: to double the Gross Enrolment Ratio in higher education, resolve the geographically skewed access to higher educational institutions, achieve globally acceptable quality standards across the country, position at least 20 Indian institutions among the top global institutions, promote research / innovation ecosystem, substantially improve employability of the students, promote framework for internationalisation; better accreditation systems, use of education technology, governance reforms and quantum increase in investments. To finalize strategies, identify initiatives, estimate required investments, and timelines for implementation for various interventions, 10 Expert Groups, are constituted as given in the **Annexure.** Groups can co-opt more members as per requirement.

3. The Expert Groups are requested to meet either physically or through video conferences/skype for deliberating on the issues posed to the Committee. The Group is expected to present a plan of action consisting of:

(a) Strategies
(b) Initiatives
(c) Investment required
(d) Timelines for implementation
(e) Monitoring systems

4. This report prepared by the Expert Group may be presented in the **Policy Retreat** at Lai Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie between **22nd – 24th April. 2019** for further deliberation and adoption.

5. The overall coordination of the preparation of the EQUIP plan would be Prof B. Venkatesh Kumar, Professor TISS, and National Coordinator of RUSA (kumarbvenkatesh@gmail.com). The functioning of the Groups would be facilitated by the NHERC (RUSA).

Education Quality Upgradation and Inclusion Project (EQUIP) 2019-2024

Expert Group 1: Strategies for expanding access

a. Doubling GER to 52 by 2024
b. Double enrolment of SCs in higher education
c. To triple the enrolment of students in ST category
d. Strategies for geographically backward areas to catch up with National average
e. The spread of the Open Distance Learning

Chairperson	Members	Convenors
Shri Hasmukh Adhia, Chancellor Central University Gujarat	Prof Ami Upadhyay, Vice-Chancellor, Dr. Babasaheb Ambedkar Open University, Ahmedabad	Shri Madhu Ranjan Kumar, Joint Secy MHRD
	Prof P D Jose, IIM Bangalore	Shri Dev Swarup, Jt Secy

	Prof.T.V. Kattimanni, Vice Chancellor, Indira Gandhi National Tribal University (IGNTU) Amarkantak	UGC
	Prof Uma Kanjilal, Director IUC, IGNOU	
	Ms. Damayanti, Secy Higher Education, Govt of AP	
Rapporteur	Shri S Saravanan & Dr. Vivek Nagpal, Sr Consultants RUSA Resource Centre	

Group 2: Towards global best teaching/learning process

- **a.** Curriculum revision - review yearly and revised at least once in three years - modalities for mandatory implementation - incentivizing the adoption of the revised curriculum - weightage in NIRF and NBA/NAAC
- **b.** Induction and Professional development of faculty - strategies
- **c.** Filling up vacancies of full-time faculty - adjunct faculty to be increased
- **d.** Tenure track of faculty
- **e.** Building state-of-the-art infrastructure for all institutions
- **f.** Assessment/Exam reforms
- **g.** Mentorship of neighbouring institutions
- **h.** Energizing Classroom - student feedback

Chairperson	Members	Convenors
Dr. K. Kasturirangan, Chancellor Central University of Rajasthan & former Secretary Dept. of Space - Chairman	Prof Sanjay Dhande, former Director IIT Kanpur	Shri Girish Hosur, Joint Secy, MHRD Dr. Renu Batra, Addl. Secy. UGC
	Prof. Anil Sahasrabudhe, Chairman AICTE	
	Prof Bhushan Patwardhan, Vice Chairman UGC	
	Prof Vaidhyasubramanium, Vice Chancellor, SASTRA University	
	Prof Amita Chatterjee, former Vice-Chancellor, Presidency University	
	Prof. K. Ramachandran, NIEPA	
	Dr. Shakila T. Shamsu, OSD (NEP), MHRD	
Rapporteur	Ms Sugandha Gupta & Ms. Suman Shukla, Sr. Consultants RUSA Resource centre	

Group 3: Promoting Excellence

- **a.** Facilitating pathways for 20 Indian Institutions to reach global top-200
- **b.** Transparent and easy systems for Identification
- **c.** Automatic and flexible funding for promoting excellence

Chairperson	Members	Convenors
Shri Pawan	Prof Partha Chakravarthy, Director IIT Kharagpur	Shri Sanjay K Sinha, Joint Secy

Goenka, Chairman BoG IIT Madras - Chairman	Prof C Rajkumar, Vice Chancellor, Jindal Global University	MHRD Dr. Sunita Siwach Jt Secy UGC Dr. Archana Thakur, Joint Secretary, UGC
	Prof P Appa Rao, Vice Chancellor, HCU	
	Prof Jaspal Sandhu, Vice Chancellor, GND Univ Amritsar	
Rapporteur	Ms Shreya Majumdar, Sr Consultant RUSA Resource Centre	

Group 4: Governance reforms

a. Internal governance in the university
  - **i.** ERP implementation & de-bureaucratizing processes
  - **ii.** Training the non-academic staff
  - iii. Decentralization at the department/school level
  - iv. Institution's academic bodies - minimum qualifications

b. Affiliation reforms - autonomy for the best performing colleges
c. Process for selection of VCs/Deans/Registrars/FOs
d. Leadership training - handbooks on processes for all
e. Grievance redressal systems

Chairperson	Members	Convenors
Prof M S Ananth, Chairman of National Testing Agency	Prof Jagadesh Kumar, Vice Chancellor JNU	Ms. Ishita Roy, Joint Secretary (HE) MHRD Dr. Pankaj Mittal Addl Secy UGC
	Prof Soumendra Mohan Patnaik, Vice Chancellor, Utkal University	
	Prof Souvik Bhattacharya Vice Chancellor BITS Pilani	
	Prof Sushma Yadav, VC Mahila University Sonipat	
	Shri Anil Kumar, Addl CS Higher Education, Govt of Karnataka	
	Prof. V G Idichandy, Former Dean, Students and Deputy Director in IIT Madras	
Rapporteur	Ms. Shambhavi Singh, Sr Consultant NHERC	

Group 5: Assessment, Accreditation & Ranking systems;

a. Achieving accreditation to all HEIs by 2024
b. Multiple accreditation system
c. Mentoring system for the un-accredited institutions
d. Making participation in National Ranking mandatory for all publicly funded institutions

Chairperson	Members	Convenors
Prof Surendra Prasad, former Director IIT Delhi	Prof V S Chauhan Chairman NAAC	Shri Madan Mohan, Dy Dir Gen Statistics, MHRD Dr. Avichal Kapoor, UGC
	Prof K K Agarwal, Chairman NBA	
	Prof S.C. Sahasrabudhe IIT Bombay	
	Prof U. Chandrashekhar IIM	

	Bangalore	
Rapporteur	Ms Chandana Gurung and Ms Priya Singh, Consultants, RUSA Resource Centre	

Group 6: Promotion of research, innovation:

- **a.** NRF - setting up, funding systems
- **b.** National Knowledge Portal for dissemination and transparency
- **c.** Building world-class labs in Science and technology
- **d.** Innovation promotion systems - MHRD Innovation Cell - Innovation Councils in all institutions
- **e.** Cognitive skills promotion - courses/assignments mandatory

Chairperson	Members	Convenors
Dr. Vijay Raghavan, Principal Scientific Adviser to PM - Chairman	Prof Bhaskar Ramamurthi, Director IIT Madras	Dr. M P Poonia, Vice Chairman AICTE Dr. Abhay Jere CIO MHRD
	Prof Rakesh Bhatnagar, Vice Chancellor, BHU	
	Prof Mini Thomas, Director NIT Trichy	
	Prof Vinod Kumar Singh, IIT Kanpur	
Rapporteur	Ms Misimi Kakoti, Consultant NHERC	

Group 7: Employability & entrepreneurship

- **a.** Soft skills training
- **b.** Link with NAPS/NATS - apprenticeship on demand
- **c.** Introduction of professional courses in non-technical subjects - skill embedded degree courses
- **d.** PPP arrangements with skill providers and Industry
- **e.** Link with industry
- **f.** Promotion of start-up culture - incubation centres

Chairperson	Members	Convenors
Shri Ajit Balakrishnan, Former Chairman, IIM Kolkata	Shri RCM Reddy, CEO ILFS Skills Ltd	Lt. Col Kailash Bansal, AICTE Shri VLVSS Subba Rao, Senior Economic Advisor, MHRD
	Ms. Swati Majumdar, Symbiosis University	
	Capt Ramanujam, CEO Logistics Sector Skills Council	
	Ms. Anita Rajan, COO Tata Strive, Mumbai	
Rapporteur	Ms Srimoyee Mitra, Consultant, RUSA Resource Center	

Group 8: Using Technology for better reach:

- **a.** Promote online degrees by universities
- **b.** ODB in all HEIs
- **c.** SWAYAM promotion - covering all the courses offered in the colleges/universities
- **d.** DTH channels - promotion and improving access
- **e.** NDL and other digital initiatives

Chairperson	Members	Convenors
	Prof Sridhar Iyer, IIT Bombay	Dr. Saravna

Chairperson	Members	Convenors
Prof Deepak Pathak – Chairman, Prof IIT Bombay	Prof Rajaram Sharma, NCERT	Kumar, Jt Secretary MHRD Shri N. Parameswaran, Sr Consultant MHRD Dr. G S Malik, Sr Consultant MHRD
	Prof Kannan Moudgalya, IIT Bombay	
	Prof Ranjan Bose, Director, IIIT Delhi	
	Prof. Sanjay Agrawal, NITTR Bhopal	
	Prof Andrew Thangaraj, IIT Madras	
	Prof. PD Jose, IIM Bangalore	
	Prof. TV Prabhakar, IIT Kanpur	
Rapporteur	Ms Upali Bhattacharya, Consultant NHERC	

Group 9: Internationalisation in Higher Education

a. Increasing international students to 10% in all premier institutions - Study In India - funding access to international students
b. Policy for international students - admission, etc.
c. Foreign universities in India
d. Promoting academic collaborations
e. Promote Indian universities offshore campuses

Chairperson	Members	Convenors
Shri Amitabh Kant, Chief Executive Officer, NITI Aayog	Prof Ajit Chaturvedi Director IIT Roorkee	Dr. N. Saravana Kumar, Joint Secy MHRD Shri Sandeep Goel, CGM EdCIL
	Shri Narayanan Ramaswamy KPMG India	
	Dr Vidya Yeravdekar SYMBIOSIS University	
	Shri Diptiman Das CMD EdCIL	
	Prof. N.V. Varghese, Vice Chancellor, National Institute of Educational Planning and Administration(NIEPA), New Delhi	
	Prof. K. Ramachandran, NIEPA	
Rapporteur	Ms Pratiksha Khanduri, Sr Consultant NHERC	

Group 10: Financing higher education

a. Strategies to bring higher fund flow into Higher Education - HEFA model
b. Strengthening premier institutions for complete financial autonomy
c. Private sector participation in quality education
d. Financing State higher education systems
e. Alumni donation system: Study-now-Pay-later
f. CSR/Philanthropy mobilization
g. DBT to students - need-blind support - financial autonomy for institutions
h. Making Education affordable to ail: Educational loans - preferential lending system

Chairperson	Members	Convenors
	Prof Devang Khakhar,	

Shri Kris Gopalakrishnan, former CEO INFOSYS	Director IIT Bombay	Shri VLVSS Subba Rao, Sr Economic Adviser MHRD
	Prof V Ramgopal Rao, Director IIT Delhi	
	Shri Anurag Behar, COO Azim Premji Univeristy	Shri Prakash Thakur, CFO UGC
	Shri Navin Mittal, Commissioner Collegiate Education, Govt of Telengana.	
	Dr. Fransisco Mamolejo, Lead Education expert, World Bank New Delhi	
	Shri G P Upadhyay, Spl CS Govt of Sikkim	
Rapporteur	Mr Piyush Wankhade & Ms Lopamudra Chakravarty , Consultants RUSA Resource Centre